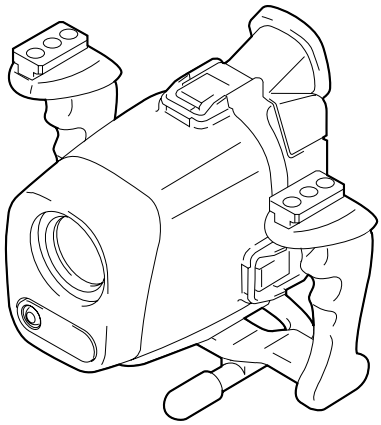
MPK-DVF2

SERVICE MANUAL

Ver 1.0 1999.03

US Model
Canadian Model
AEP Model



Differences Manual

This service manual only describes what are difference from the MPK-DVF.
When repairing, use the service manual for MPK-DVF (9-974-083-11).

• Main differences

Change of monitor ASSY and base (Correspond to DCR-TRV10 and DCR-TRV900)

Ref. No.	MPK-DVF		MPK-DVF2	
1	MONITOR ASSY (US, Canadian)	A-7007-341-A	MONITOR ASSY (US, Canadian)	A-7007-943-A
	MONITOR ASSY (AEP)	A-7007-432-A	MONITOR ASSY (AEP)	A-7007-942-A
15	PACKING, LCD	3-977-996-01	PACKING, LCD	3-055-912-01
107	BASE (B)	3-051-582-01	BASE (B)	3-051-582-02
114	BASE, SLIDE (PLATE, SCREW)	3-051-579-01	BASE, SLIDE (PLATE, SCREW)	3-051-579-02
115	SCREW, CAMERA FITTING	3-960-767-01	SCREW, CAMERA FITTING	3-960-767-11
116	————————		BASE(C)	3-054-728-01

MARINE PACK

MICROFILM

SONY®

SPECIFICATIONS

Material
Aluminum alloy, glass, plastic

Waterproofing
O-ring, 3 buckles

Usable depth
Up to 75 meters (246 feet)

Underwater microphone
Condenser microphone (monaural)

Controllable function
Power on/off, recording start/stop, auto focus on/off, power zooming, photo recording (DCR-TRV8/TRV9/TRV10/TRV890/TRV900 only)

Dimensions
Approx. 297 x 212 x 318 mm (w/h/d)
(11 3/4 x 8 3/8 x 12 5/8 in.)

Mass
Approx. 4.2 kg (9 lb 5 oz)

Supplied accessories
Camera mounting shoe A (1)
Camera mounting shoe B (1)
Spacer for camera mounting shoe B (1)
Screw plate (1)
Screw driver part (1)
Battery cushion (1)
O-ring (1)
Grease (1)
NP-F330 battery pack for the monitor (1)
R6 (size AA) battery (2)
Sunshade (1)
Color filter (1)
Reflex prevention ring (2)
Underwater wide-conversion lens (1)
Carrying bag (1)
Carrying belt (1)
Operating instructions (1)
Strap (3)

Recommended accessory
Underwater video light HVL-ML20

Design and specifications are subject to change without notice.

This section is extracted from instruction manual.

Preparing

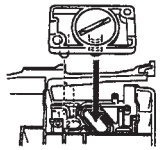
1 Preparing the camcorder

The DCR-TRV9 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "DCR-TRV9 only".
For details, please refer to the operating instructions supplied with your camcorder.

(1) Remove the lens cap, shoulder strap, conversion lens or filter from the camcorder.
(2) Attach a charged battery pack.
(3) Insert a cassette tape.
(4) Attach the reflex prevention ring to the tip of the lens.
for DCR-TRV7/TRV9 : ø 37 mm (large)
for DCR-TRV8/TRV10 : ø 30 mm (small)
for DCR-TRV890/TRV900 : disuse
(5) Attach the camera mounting shoe A (for **DCR-TRV7**) or the camera mounting shoe B* (for **DCR-TRV8******/TRV9/TRV10******/TRV890/TRV900**).
Remove the metal part from the camera mounting shoe B and firmly attach the screw plate until the catch on the reverse side of the camera mounting shoe B clicks into place.
For **DCR-TRV8/TRV9/TRV10/TRV890/TRV900**, connect the A/V connecting cable of the camera mounting shoe B to the camcorder's AUDIO/VIDEO jack.
(6) Adjust the camcorder.
Cancel the following functions: BACK LIGHT,NightShot, PROGRAM AE and picture effect.

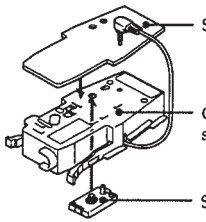
Camera mounting shoe A	DCR-TRV7	
Camera mounting shoe B	1	DCR-TRV9
	2	DCR-TRV890/TRV900
	3	DCR-TRV8/TRV10

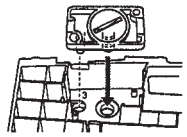
*** To attach the camera mounting shoe B**
Attach the screw plate to the camera mounting shoe B.



Installing position of the screw plate

** Use the spacer supplied when you attach the camera mounting shoe B.

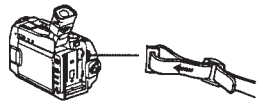




Installing position of the screw plate

US

1



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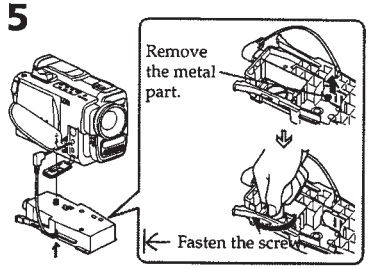

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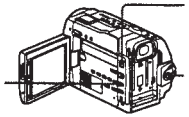
DCR-TRV7

④ Select V-OUT/LCD in the DISPLAY menu, and press the DISPLAY button on your camcorder before attaching it to the marine pack.

DCR-TRV8/TRV9/TRV10/TRV890/TRV900



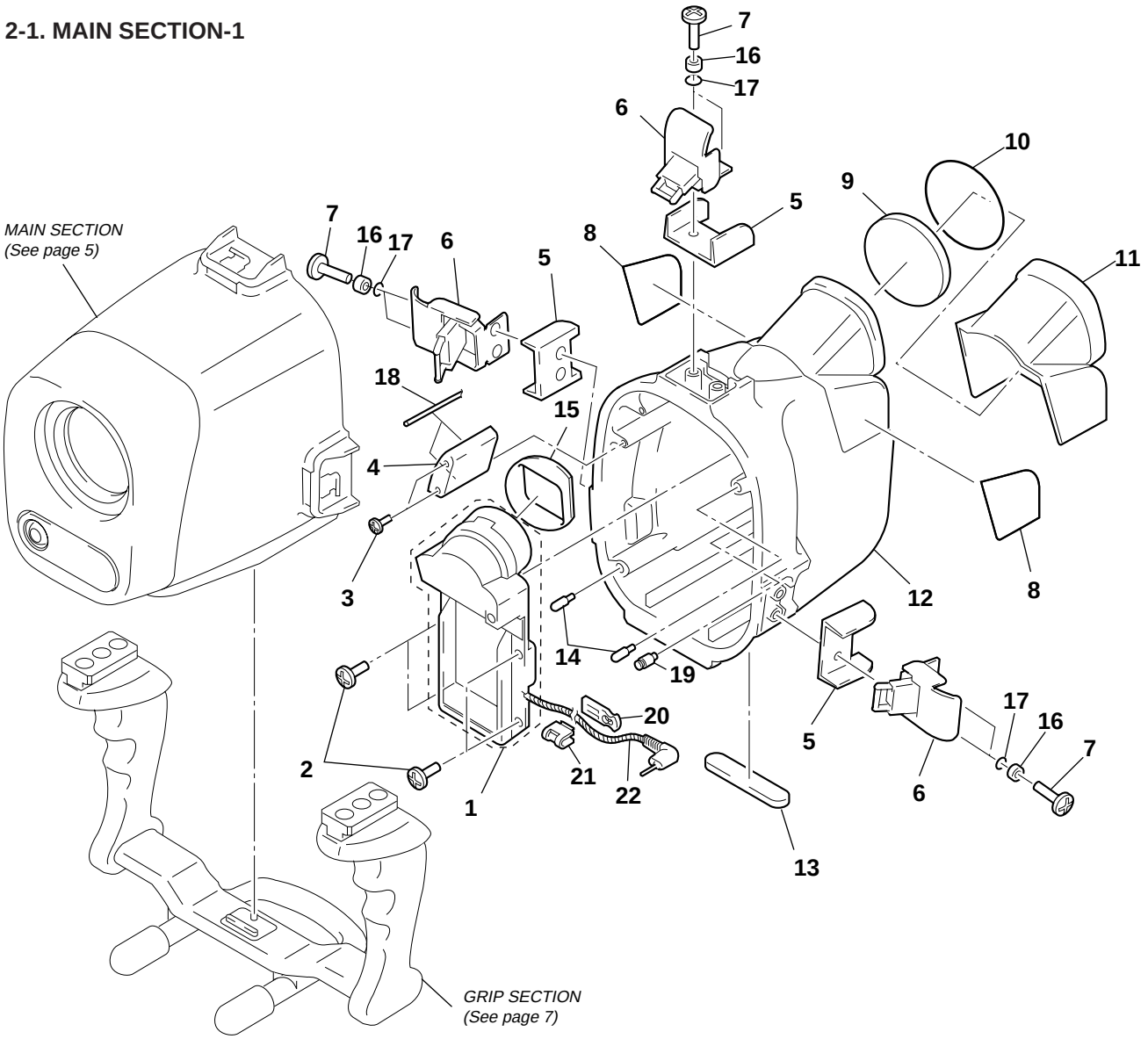
④ Select V-OUT/LCD in the DISPLAY menu, and press the DISPLAY button on your camcorder before attaching it to the marine pack.

SECTION 2
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

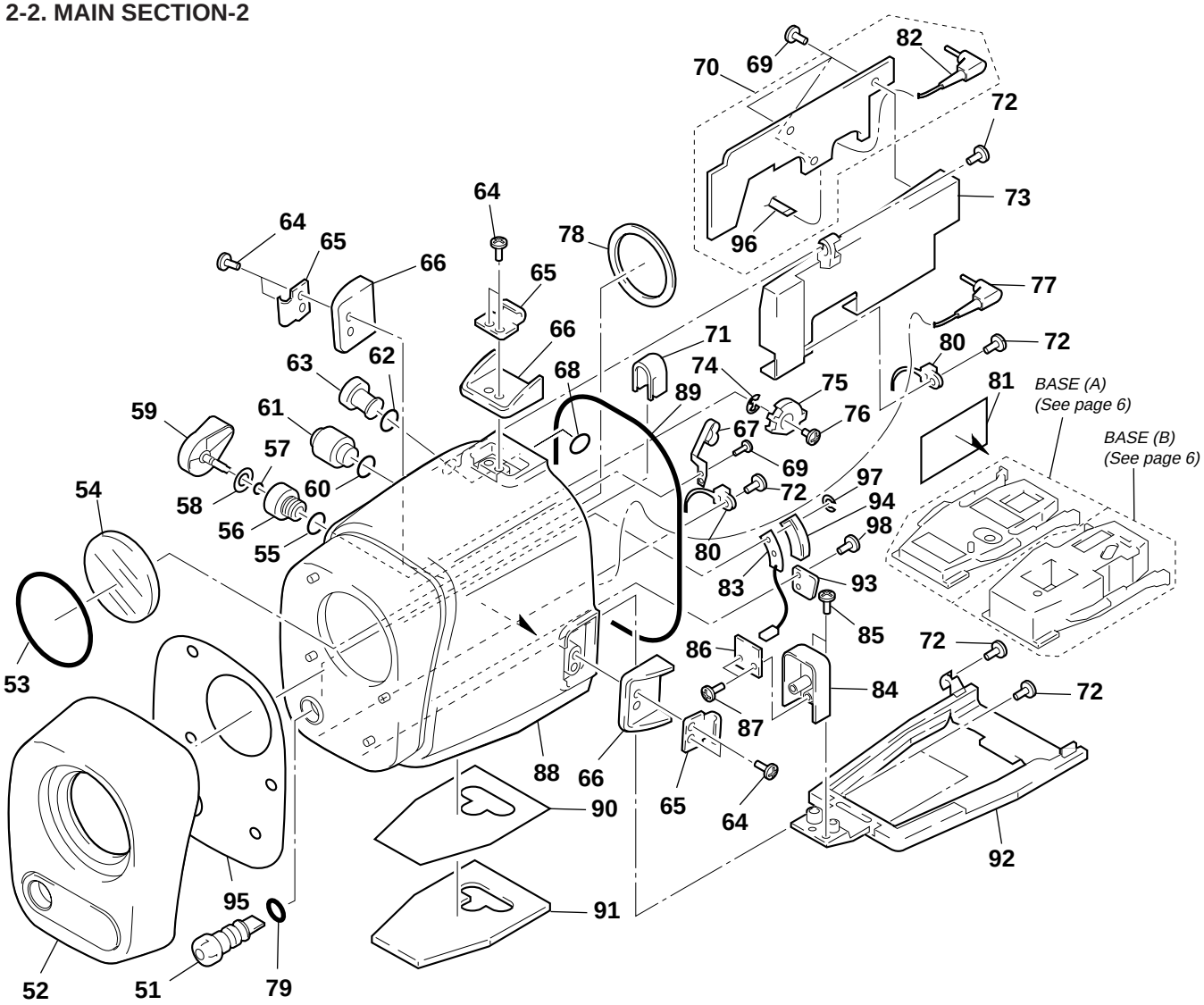
Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

2-1. MAIN SECTION-1



Ref. No.	Part No.	Description	Remark
1	A-7007-943-A	MONITOR ASSY (US, Canadian)	
1	A-7007-942-A	MONITOR ASSY (AEP)	
2	3-977-369-01	SCREW, +P M3X8	
3	3-052-092-01	SCREW, +P M2.6	
4	3-051-577-01	COVER, FIBER	
5	3-976-710-11	COVER (R), BUCKLE	
! 6	2-390-778-02	BUCKLE	
7	3-977-370-11	SCREW, +P M3.5X10	
8	3-977-994-01	SHEET, REAR PROTECTOR ADHESIVE	
! 9	3-976-695-01	GLASS, REAR	
! 10	3-977-361-01	RING (G58), O	
! 11	3-976-694-01	PROTECTOR, REAR CASE	
! 12	3-051-575-01	CASE, REAR	
13	3-976-698-01	FOOT, MAIN RUBBER	
14	3-977-265-01	PIN, POSITIONING	
! 15	3-055-912-01	PACKING, LCD	
16	3-052-426-01	COLLAR, PUNCH LOCK STOPPER	
! 17	3-052-427-01	RING (S-5), O	
18	3-051-698-01	FIBER, PLASTIC	
19	3-051-583-01	PIN, CABLE FIXED	
* 20	3-051-584-01	STRAP (A), CABLE	
* 21	3-051-585-01	STRAP (B), CABLE	
* 22	3-054-713-01	TUBE (A) SPIRAL	
	3-054-714-01	TUBE (B) SPIRAL	

2-2. MAIN SECTION-2



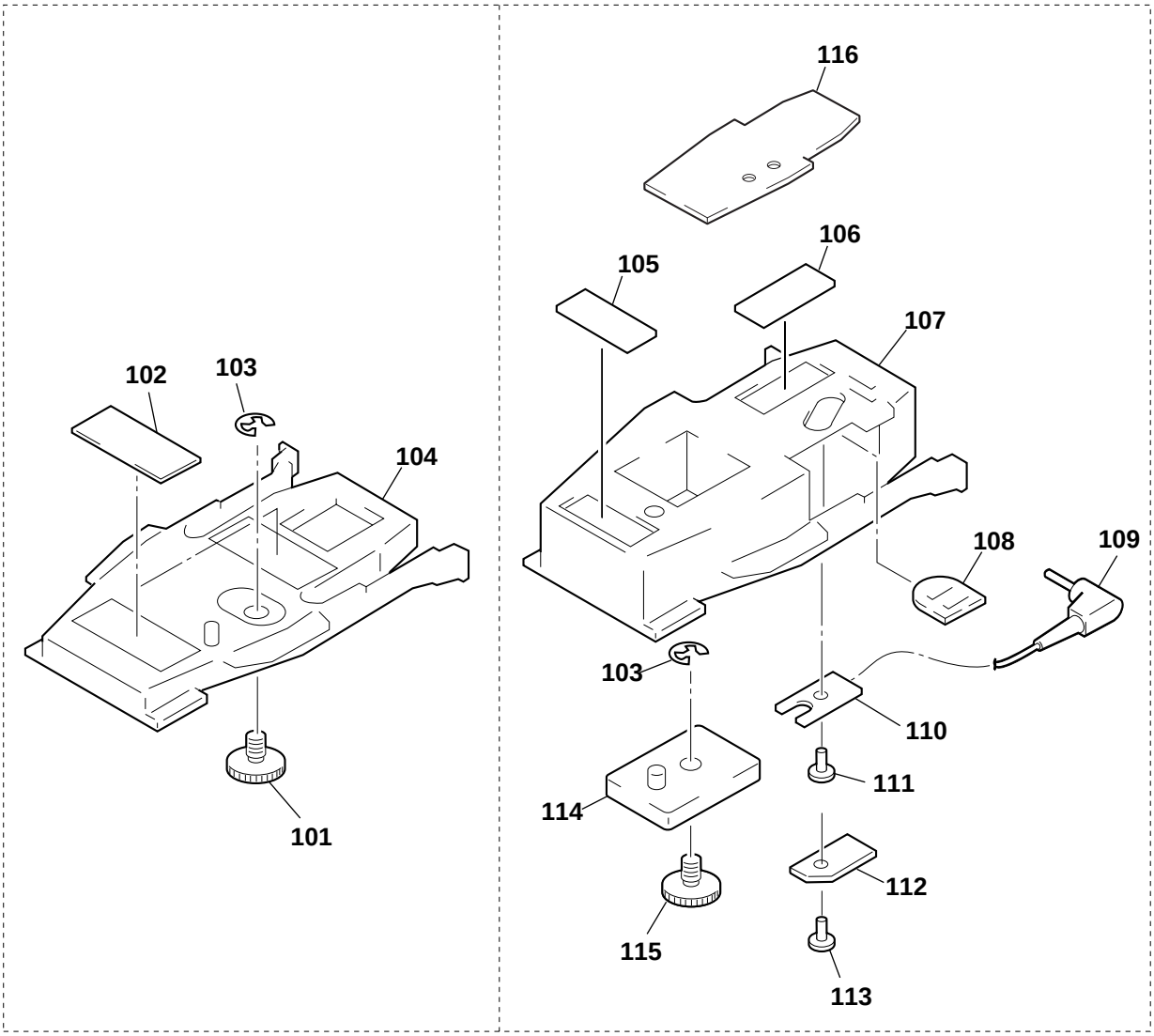
Ref. No.	Part No.	Description	Remark
51	A-7007-751-A	MICROPHONE ASSY, UNDERWATER	
52	3-976-665-01	PROTECTOR, FRONT CASE	
! 53	3-977-360-01	RING (G55), O	
! 54	3-976-668-01	GLASS, FRONT	
! 55	3-977-363-01	RING (JAS01011), O	
56	3-976-681-01	SWITCH (BEARING), POWER	
! 57	3-977-357-01	RING (P-3), O	
58	3-977-915-01	WAVE, WASHER	
59	3-976-669-11	LEVER, POWER	
! 60	3-950-888-01	RING (P-11), O	
61	X-3942-412-1	BUTTON ASSY, AF SELECTION	
! 62	3-950-858-01	RING (P-9), O	
63	3-976-680-01	WINDOW, SENSOR	
64	3-977-370-01	SCREW, +P M3.5X10	
! 65	2-115-906-01	RETAINER, BUCKLE	
66	3-976-711-01	COVER (F), BUCKLE	
67	3-051-559-01	SPRING, POWER SWITCH	
! 68	3-950-907-01	RING (S-8), O	
69	3-977-366-01	SCREW, +P M2	
70	A-7073-650-A	LM-57 BOARD, COMPLETE	
71	3-976-682-01	COVER, MICROPHONE	
72	3-977-369-01	SCREW, +P M3X8	
73	3-051-599-01	COVER, INNER	
74	2-391-512-01	E RING, 5	

Ref. No.	Part No.	Description	Remark
75	3-051-574-01	CAM, POWER LEVER	
76	3-977-368-11	SCREW, +P M2.6	
77	1-696-932-51	CORD, CONNECTION (MIC)	
78	3-051-586-01	PROTECTOR, FRONT LENS	
! 79	3-950-846-01	RING (P-7), O	
80	3-977-269-01	INSULOCK (T18 MRW)	
81	3-052-219-01	GUARD, CAMERA	
82	1-696-933-71	CORD, CONNECTION (LANC)	
83	A-7073-652-A	LL-9 BOARD, COMPLETE	
84	3-977-974-01	COVER, LED BOARD	
85	3-978-338-01	SCREW, +P M2X5 BT	
86	A-7073-651-A	LL-8 BOARD, COMPLETE	
87	3-977-366-01	SCREW, +P M2X4 BT	
! 88	3-976-664-11	CASE, FRONT	
! 89	3-977-362-01	RING (V145), O	
90	3-977-972-01	SHEET, GUARD RUBBER ADHESIVE	
91	3-977-264-01	GUARD RUBBER	
92	3-976-666-01	RAIL, BASE	
93	3-051-601-01	COVER, CABLE	
94	3-051-602-01	COVER, FRONT SENSOR	
! 95	3-977-995-01	SHEET, FRONT PROTECTOR ADHESIVE	
96	1-696-021-31	WIRE (LEAK SENSOR)	
97	3-052-220-01	RING (GTW-2), GRIP MOLD STOPPER	
98	3-977-369-21	SCREW, +P M3	

2-3. BASE (A), (B)

BASE (A) : DCR-TRV7

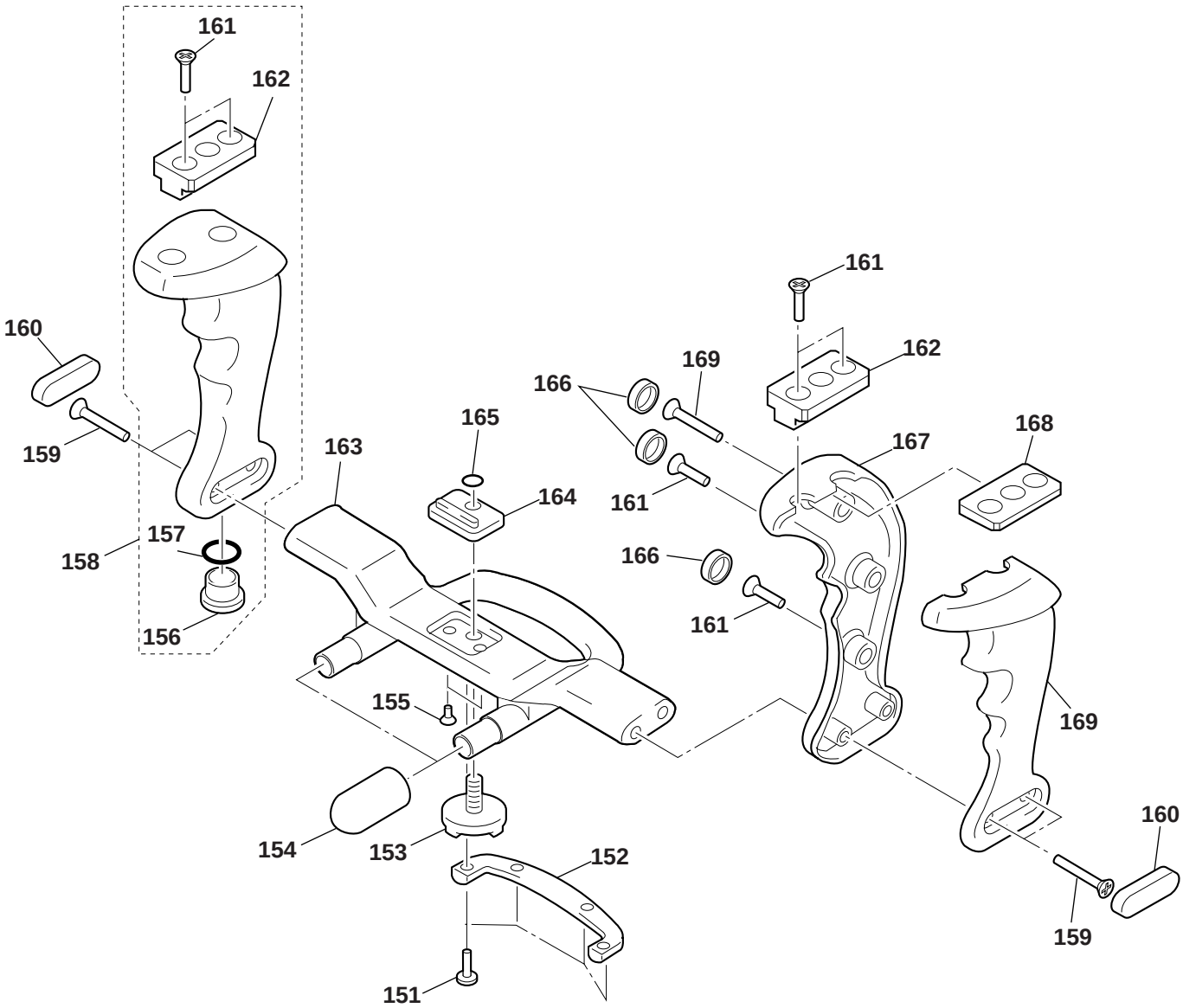
BASE (B) : DCR-TRV9, DCR-TRV10, DCR-TRV900



Ref. No.	Part No.	Description	Remark
* 101	3-970-217-01	SCREW, CAMERA FITTING	
102	3-964-843-01	SHEET, PROTECTION	
103	2-391-512-01	E RING, 5	
104	3-976-671-01	BASE	
105	3-052-491-01	SHEET (B), PROTECTION	
* 106	3-971-661-01	SHEET (A), PROTECTION	
107	3-051-582-02	BASE (B)	
108	3-953-086-01	BRACKET	

Ref. No.	Part No.	Description	Remark
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	
110	A-7073-655-A	DZ-3 BOARD, COMPLETE	
111	3-052-092-01	SCREW, +P M2X6	
112	3-051-587-01	COVER, AV JACK	
113	3-977-366-11	SCREW, +P M2	
114	3-051-579-02	BASE, SLIDE (PLATE, SCREW)	
115	3-960-767-11	SCREW, CAMERA FITTING	
116	3-054-728-01	BASE (C)	

2-4. GRIP SECTION

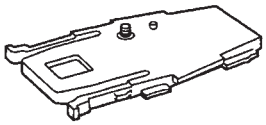


Ref. No.	Part No.	Description	Remark
151	3-977-371-01	SCREW, +P M4X8	
152	3-976-691-01	FOOT, KEEL	
153	3-976-690-01	KNOB, TRIPOD SCREW	
154	3-976-689-01	FOOT, KEEL RUBBER	
155	2-186-307-01	SCREW (2) (M3X8), TAPPING	
156	3-945-010-01	LID, BATTERY REPLACEMENT	
! 157	3-945-087-01	RING, O	
158	A-7007-753-A	GRIP (R) ASSY	
159	3-944-944-11	SCREW, +K (5X30)	
160	3-945-020-01	COVER, GRIP	

Ref. No.	Part No.	Description	Remark
161	3-944-944-01	SCREW, +K (5X18)	
162	3-944-943-01	SHOE, ACCESSORY	
163	3-976-688-01	KEEL	
164	3-976-692-01	FIXED (LARGE)	
! 165	3-950-887-01	RING (P-4), O	
166	3-946-347-01	COVER (2), GRIP	
167	3-945-019-01	GRIP (L P)	
168	3-945-011-01	BRACKET, ACCESSORY SHOE	
169	3-945-013-01	GRIP (L D)	

2-5. ACCESSORIES SECTION

(See Page 6)



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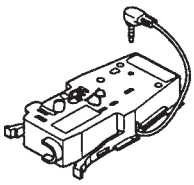

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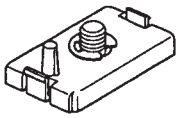

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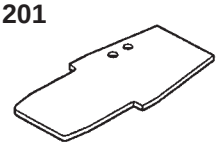

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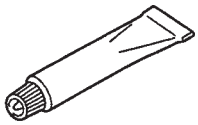

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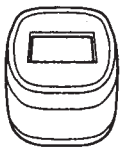

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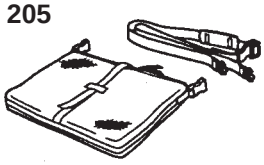

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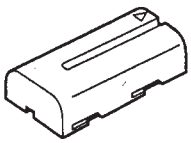

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
		**********	
201	3-054-728-01	BASE (C)	
! 202	3-977-362-01	RING, (V145) O	
203	3-977-715-01	HOOD, LIGHT INTERCEPTION	
204	3-976-762-01	CASE, SOFT CARRYING	
205	3-977-971-01	CARRYING BELT	
206	3-953-086-01	BRACKET	
207	3-051-636-01	CONVERSION (MAIN). WIDE	
	3-052-046-01	CAP, FRONT	
	3-052-047-01	CAP, REAR	
208	A-7007-757-A	FILTER BLOCK ASSY	
209	** NP-F330 BATTERY PACK		
210	2-115-921-01	GREASE	

Ref. No.	Part No.	Description	Remark
211	3-055-230-01	REFLEX PREVENTION RING (ø37)	
	3-055-231-01	REFLEX PREVENTION RING (ø30)	
	3-866-145-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH)(US/CND)	
	3-866-145-21	MANUAL, INSTRUCTION (ENGLISH/FRENCH/GERMAN/SPANISH) (AEP)	
	3-866-145-31	MANUAL, INSTRUCTION (DUTCH/SWEDISH/ ITALIAN/PORTUGUESE) (AEP)	
	3-866-145-41	MANUAL, INSTRUCTION (RUSSIAN/ARABIC/CHINESE/KOREAN) (AEP)	

Note .
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

DZ-3 LL-8 LL-9 LM-57

SECTION 3
ELECTRICAL PARTS LIST

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
	A-7073-655-A	DZ-3 BOARD, COMPLETE **********	
	A-7073-651-A	LL-8 BOARD, COMPLETE **********	
	A-7073-652-A	LL-9 BOARD, COMPLETE **********	
	A-7073-650-A	LM-57 BOARD, COMPLETE **********	
		MISCELLANEOUS **********	
77	1-696-932-51	CORD, CONNECTION (MIC)	
82	1-696-933-71	CORD, CONNECTION (LANC)	
96	1-696-021-31	WIRE (LEAK SENSOR)	
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	

9-974-144-11

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Personal A&V Products Company

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MPK-DVF

SERVICE MANUAL

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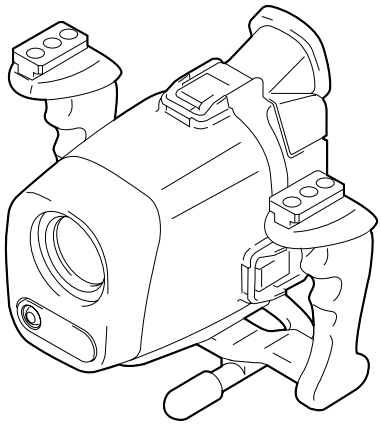
US Model
Canadian Model
AEP Model



SPECIFICATIONS

Material
Aluminum alloy, glass, plastic

Waterproofing
O-ring, 3 buckles

Usable depth
Up to 75 meters (246 feet)

Underwater microphone
Condenser microphone (monaural)

Controllable function
Power on/off, recording start/stop, auto focus on/off, power zooming, photo recording (DCR-TRV9 only)

Dimensions
Approx. 297 x 212 x 318 mm (w/h/d)
(11 3/4 x 8 3/8 x 12 5/8 in.)

Mass
Approx. 4.2 kg (9 lb 5 oz)

Supplied accessories
Camera mounting shoe A (1)
Camera mounting shoe B (1)
Screw plate (1)
Screw driver part (1)
Battery cushion (1)
O-ring (1)
Grease (1)
NP-F330 battery pack for the monitor (1)
R6 (size AA) battery (2)
Sunshade (1)
Color filter (1)
Reflex prevention ring (1)
Underwater wide-conversion lens (1)
Carrying bag (1)
Carrying belt (1)
Operating instructions (1)
Strap (3)

Recommended accessory
Underwater video light HVL-ML20

Design and specifications are subject to change without notice.

MARINE PACK

MICROFILM

SONY®

SECTION 1
GENERAL

This section is extracted from instruction manual.

Features and Precautions

EN

- MPK-DVF can be used with the Sony Handycam Vision™ camcorder DCR-TRV7/ TRV9 (NTSC), DCR-TRV7E/ TRV9E (PAL)
- Recording at a depth of 75 meters (246 feet) is possible.
- The following operation can be performed underwater.
  - Power on/off
  - Auto focusing on/off
  - Recording start/stop
  - Photo recording (DCR-TRV9 only)
  - Electric zoom function
  - Monitoring on the LCD screen

We recommend you use the supplied wide-conversion lens when using the marine pack.

This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

On the video camera recording

- Take care not to expose the equipment to salty air. Do not drop water on the equipment.
- Do not open the marine pack underwater or at the beach. Preparation such as installing and checking the equipment should be done in a place with low humidity and no salty air.
- When your camcorder is to be used near the sea for a long time, we recommend that it be checked periodically by Sony dealer.
- If the equipment becomes wet, take it immediately to the nearest Sony dealer for preventive maintenance.
- We recommend you use battery packs with a large capacity.

Features and Precautions

On the marine pack

- If you open and join the front and rear shells in a place with high temperature and high humidity, moisture condensation may occur when you put the marine pack in the water, causing the front glass to fog.
  The waterproof integrity of the marine pack is maintained by the O-ring, and the groove and surface where it touches. Be especially careful not to damage or deform that area. For details, see "Note on the O-ring" (page 16).
- Do not leave the marine pack under direct sunlight for a long period of time, otherwise the temperature in the marine pack may rise and the equipment inside may be damaged. If you can not avoid leaving the marine pack under direct sunlight, be sure to cover the marine pack with a towel or other protection.
- Do not throw the marine pack into the water. Lower it gently into the water.

On recording underwater

- Checking that the equipment operates correctly and that there is no water leakage at a depth of about one meter (3 feet) before you dive deeper.
- Be sure to follow the safety rules for diving, such as diving period and depth.
- Remove the bubbles from the outside of the front glass before recording.

Sony dose not accept liability for damage to the video camera recorder, battery, etc. in the marine pack or for the loss of prerecorded material if a water leakage caused by incorrect operation occurs.

On maintenance

After recording in the sea, submerge the marine pack with the buckles tightly fastened in fresh water, then wipe with a soft dry cloth.

Clean your camcorder and the inside of the marine pack with a soft dry cloth. Do not use any type of solvent such as alcohol or benzine for cleaning, as this might damage the finish.

When you store the marine pack

- Coat the O-ring slightly with the supplied grease, and put it in the groove correctly. Join the front and rear shells then put in a cool and dry place without fastening the buckles.
- Prevent dust from collecting on the O-ring.
- Avoid storing the marine pack in a very hot, cold or humid place, or together with naphthalene or camphor, as these conditions might damage the unit.

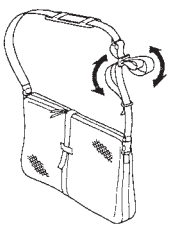
After using the marine pack

- Insert the A/V connecting cable plug to the plug holder of the camera mounting shoe B.
- Insert the remote and microphone plugs to the plug holder inside of the front shell.

Features and Precautions

Using the supplied carrying bag

Attach the supplied carrying belt and adjust the length of the belt.



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On transportation

- When transporting the marine pack, be sure to remove your camcorder from it.
- Avoid rough handling or a shock. We recommend to cover the marine pack with a towel or other protection.

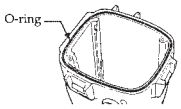
Removing the camcorder

After using

- Insert the A/V connecting cable plug to the plug holder of the camera mounting shoe B.
- Insert the remote and microphone plugs to the plug holder inside of the front shell.

Note on the O-ring

The O-ring assures the waterproof function of the marine pack. To maintain waterproof integrity, use it correctly. Incorrect handling may cause water to leak in.



Check the O-ring

Check that there are no scratches or cracks on the O-ring as they may allow water to leak in. If there are scratches or cracks, replace the damaged O-ring with a new one. Do not remove the O-ring from the groove with a metal tool or a tool with a sharp point.

Remove any dust, sand or hair from the O-ring.

Make sure there is no dust, sand or hair on the O-ring, in the groove, or on the surface of the marine pack where the O-ring touches. If there is, clean them completely, or the O-ring and the surface of the marine pack may be damaged and water may leak in.

Grease the O-ring

Check that there are no cracks or dust on the O-ring, then coat it slightly with the supplied grease using your finger. They will prevent wear. While applying the grease, recheck for cracks or dust.
Never use cloth or paper to apply grease because the fibers may cling.
Do not use any type of grease other than the supplied one, or it may damage the O-ring.
If you run out of silicone grease (2-115-921-01) you can purchase it from your nearest Sony Service Center.

Do not twist the O-ring

Put the O-ring in the groove evenly. Never twist it.

Do not pinch the O-ring with the marine pack

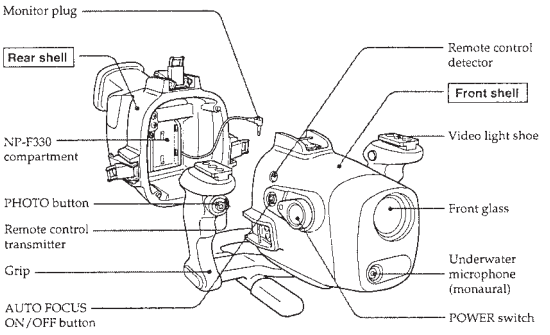
When jointing the front and rear shells, take care not to pinch the O-ring between the front and rear shells. If this happens, not only will the O-ring be damaged, but water may leak in.

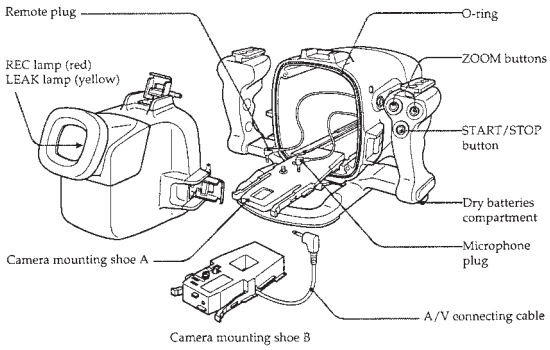
Useful life of the O-ring

Depending upon the maintenance and the length of use, we recommend changing the O-ring every one or two years.

The O-ring (3-977-362-01) can be replaced at your nearest Sony Service Center.

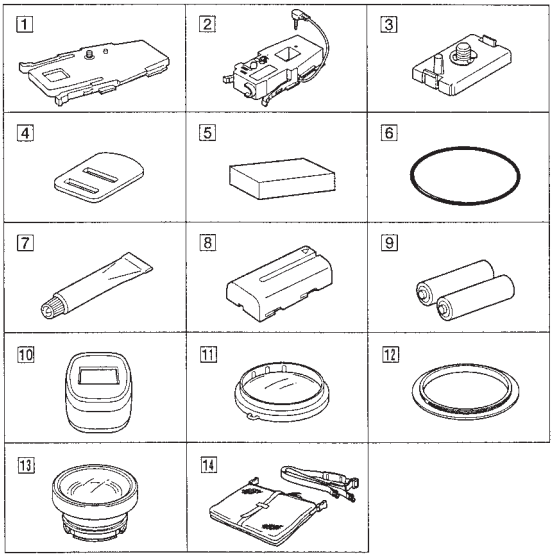
Labeling parts and controls





Checking supplied accessories

Check that the following accessories are supplied with your sports pack.



1 **Camera mounting shoe A** (1)
for DCR-TRV7
2 **Camera mounting shoe B** (1)
for DCR-TRV9
3 **Screw plate for camera mounting shoe B** (1)
4 **Screw driver part** (1)
The screw driver part is installed in the camera mounting shoe B.
5 **Battery cushion** (1)
6 **O-ring** (1)
7 **Grease** (1)
8 **NP-F330 battery pack for the LCD monitor** (1)
9 **R6 (size AA) battery** (2)
10 **Sunshade** (1)
11 **Color filter** (1)
12 **Reflex prevention ring** (1)
13 **Underwater wide-conversion lens** (1)
14 **Carrying bag** (1)
Carrying belt (1)
15 **Strap** (3)

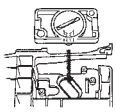
Preparing

1 Preparing the camcorder

The DCR-TRV9 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "DCR-TRV9 only".
For details, please refer to the operating instructions supplied with your camcorder.

(1) Remove the lens cap, shoulder strap, conversion lens or filter from the camcorder.
(2) Attach a charged battery pack.
(3) Insert a cassette tape.
(4) Attach the reflex prevention ring to the tip of the lens.
(5) Attach the camera mounting shoe A (for **DCR-TRV7**) or the camera mounting shoe B* (for **DCR-TRV9**).
Remove the metal part from the camera mounting shoe B and fasten the screw.
For **DCR-TRV9** only, connect the A/V connecting cable of the camera mounting shoe B to the camcorder's AUDIO/VIDEO jack.
(6) Adjust the camcorder.
(7) For DCR-TRV9 only, cancel the following functions: BACK LIGHT,NightShot, PROGRAM AE and picture effect.

*** To attach the camera mounting shoe B**
Attach the screw plate to the camera mounting shoe B.

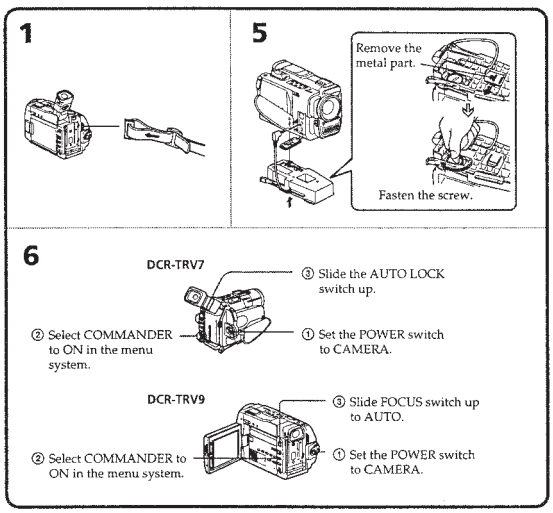


Installing positon of the screw plate

1	DCR-TRV9
2	———

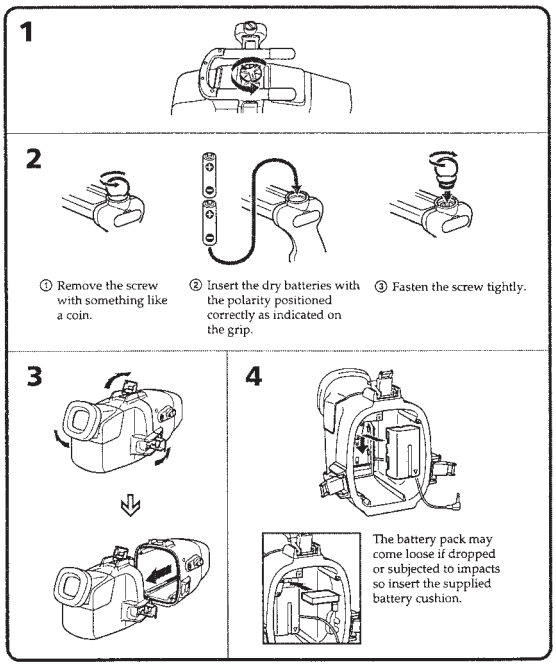
EN

Preparing


1
5
Remove the metal part.
Fasten the screw.
6
DCR-TRV7
③ Slide the AUTO LOCK switch up.
② Select COMMANDER to ON in the menu system.
① Set the POWER switch to CAMERA.
DCR-TRV9
③ Slide FOCUS switch up to AUTO.
② Select COMMANDER to ON in the menu system.
① Set the POWER switch to CAMERA.

2 Preparing the Marine Pack

(1) Remove the grip.
(2) Insert the dry batteries into the grip.
(3) Unfasten the 3 buckles and open the marine pack.
(4) Attach the supplied battery pack NP-F330 for the LCD monitor to the rear shell. Be sure to charge the battery pack fully before attaching.


1
2
① Remove the screw with something like a coin.
② Insert the dry batteries with the polarity positioned correctly as indicated on the grip.
③ Fasten the screw tightly.
3
4
The battery pack may come loose if dropped or subjected to impacts so insert the supplied battery cushion.

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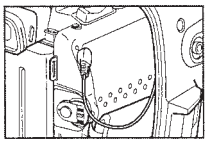
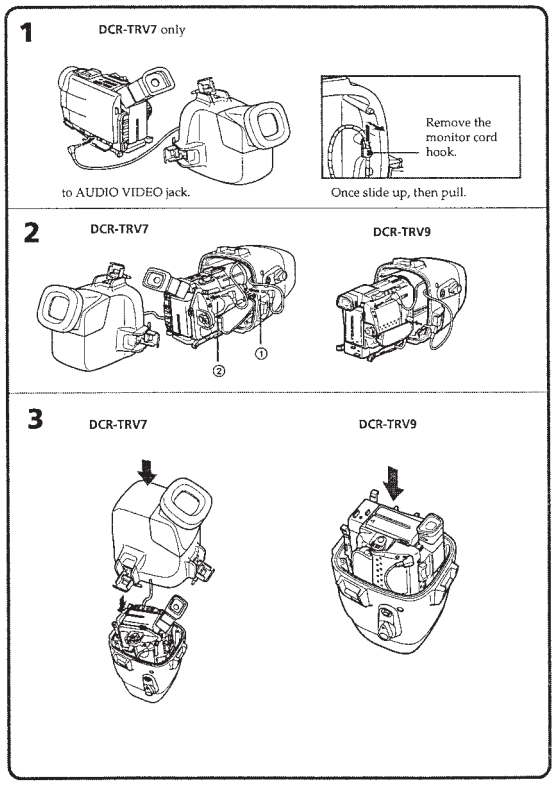
3 Attaching the camcorder to the marine pack

The cords are placed in the plug holders of the marine pack at the factory. Pull the plugs out of the holders when in use.

(1) For **DCR-TRV7** only, connect the monitor plug to AUDIO VIDEO jack.
(2) Connect the remote plug to LANC control (①) jack, and the microphone plug to MIC jack (plug in power) (②).
(3) Attach the camcorder.
Insert the camera mounting shoe until it clicks.
(4) For **DCR-TRV9** only, connect the monitor cord to the jack of camera mounting shoe B.
(5) Attach the front shell to the rear shell. Hold the both shells firmly and fasten 3 buckles securely.
Take care not to pinch the remote, microphone, and monitor cords. If this happens water may leak in.
(6) Attach the grip.



Note
To prevent the cords from twisting or slacking, make sure that these plugs are inserted as the correct direction as the illustration.



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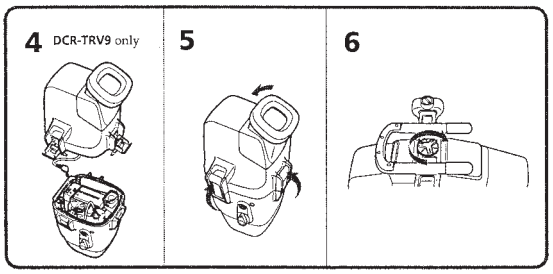


Now you ready for underwater recording. Be sure to check that there is no water leakage before you dive.

Tips for the LCD monitor

- The image does not appear on the LCD screen with only attaching the battery pack to the rear shell. The LCD screen is linked with the power of your camcorder.
- To display indicator on the LCD monitor
  Select V-OUT/LCD in the DISPLAY menu, and press the DISPLAY button on your camcorder before attaching it to the marine pack.
- Remaining battery time displayed on the LCD screen refers to the time how many minutes the battery of camcorder lasts. It is not the remaining battery time of the LCD monitor.

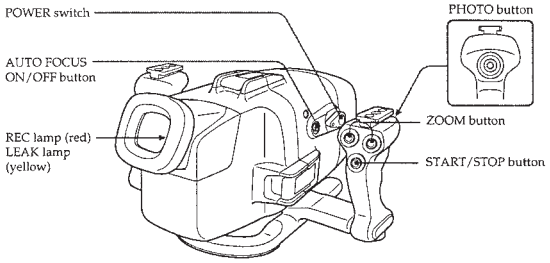
Tips for the supplied battery pack NP-F330

- The LCD monitor of the marine pack does not correspond with the "InfoLITHIUM" battery.
- What is the "InfoLITHIUM" battery pack.
  The "InfoLITHIUM" battery pack is a lithium battery pack which can exchange data with compatible video equipment about its battery consumption.
  When you use this battery pack with video equipment having the InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes.* However, if you use it with video equipment not having this mark, the remaining battery capacity will not indicated in minutes.
  * The indication may not be accurate depending on the condition and environment which the equipment is used under.

Note on dry batteries

- With normal operation, dry batteries will last for about 6 months.
- If the marine pack is not used for long period of time, remove the batteries to avoid possible damage from the battery leakage.
- Do not try to recharge dry batteries.
- If a battery leak should develop, carefully and thoroughly wipe away battery fluid from the battery compartment before inserting new ones.

Recording



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(1) Set POWER switch to ON.

(2) Press START/STOP button to start recording.
REC lamp (red) lights up during recording.

To stop recording
Press START/STOP button.

To zoom
Press ZOOM button.

Press T for telephoto (subject appears closer) and W for wide-angle (subject appears farther away).

You cannot change the zooming speed of the camcorder.

Note on Photo recording (DCR-TRV9 only)
If you press PHOTO button when a still picture appears on the LCD screen or in the viewfinder, the camcorder will record that still picture.
You cannot check the recorded picture by pressing PHOTO button lightly.

For details, please refer to the operating instructions supplied with your camcorder

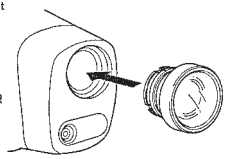
To keep a subject in focus
After you focus on a subject, press AUTO FOCUS ON/OFF button to set the camcorder to manual focus mode.

Even if fish swim between the camcorder and the subject, you can still keep the subject in focus.

Note on before recording
Check that the equipment operates correctly and that there is no water leakage at a depth of about one meter (3 feet) before you dive deeper.

Note on recording
Do not cover the control emitter or detector with your finger because the remote control signal for operations is transmitted from the grip to the marine pack.

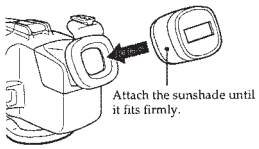
To attach the supplied wide-conversion lens
Attach the wide-conversion lens until it fits firmly.
You can attach the wide-conversion lens both on land and underwater.



Note
This wide-conversion lens is to be used only underwater.

When using the supplied color filter, attach it on top of the wide-conversion lens.

Using the supplied sunshade
The supplied sunshade for the LCD monitor reduces glare from the LCD monitor. Attach the sunshade as shown in the illustration.



You can attach the wide-conversion lens, sunshade, and color filter underwater
If the image on the LCD screen is not clear because of the air remains between these accessories and the marine pack, reattach them underwater.

When the LEAK lamp flashes

If water happen to leak in , the LEAK lamp (yellow) flashes.

In such a case, remove the marine pack from the water as soon as possible, keeping it horizontal. Be sure to surface following the safety rules for diving.

Dry the marine pack with a soft cloth and then open it.

To switch off the lamp, disconnect the remote control cable.

Check the cause of the leak.

If the camcorder is wet, take it to the nearest Sony dealer immediately.

Removing the camcorder

Before opening the marine pack, rinse it with fresh water and dry with a soft cloth.

Note
- When you open the marine pack, make sure you are dry. And take care that no water drips from your wet suit.
- When you open the marine pack, do not pull the monitor plug cord by force.

(1) Remove the grip.

(2) Unfasten 3 buckles and open the marine pack.
For **DCR-TRV9** only, disconnect the monitor cord from the camera mounting shoe B.

(3) Take the camcorder out of the front shell.
Holding the camera mounting shoe by the knobs and extract the camcorder.

(4) Disconnect the remote plug and the microphone plug.

(5) Disconnect the monitor plug (for **DCR-TRV7**), the A/V connecting cable of camera mounting shoe B (for **DCR-TRV9**) from AUDIO/VIDEO jack.
When you take the camcorder out of the shell, be careful not to pull the remote cord, microphone cord or A/V connecting cable.

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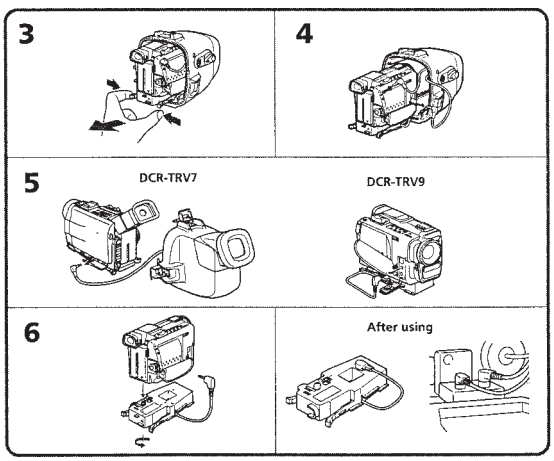
(6) Remove the camera mounting shoe.

(7) Remove the battery pack for the LCD monitor.

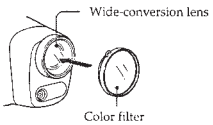


Underwater recording

Recording underwater is different from recording on land because it is affected by the clarity, depth of the water and the light condition. The following are hints for good recording underwater.

Color characteristic underwater
Water absorbs light, especially red light, so that objects in deep water are seen bluish. The color of objects is affected by the clarity of the water.

To record in natural color, use the supplied color filter.



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Best time for recording
The best recording time is from 10:00 a.m. to 2:00 p.m. When the sun its highest, optimum results can be obtained.

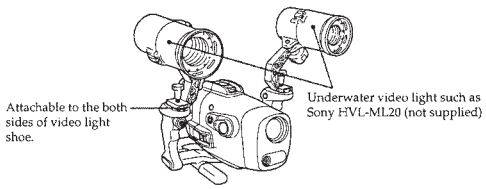
Subject size underwater
Since the refractive index underwater is higher than that in air, an object appears 1/4 more closer, and therefore larger. This phenomenon affects the lens on the camcorder as well as human eye. Using the supplied wide-conversion lens is recommended.

Camera work on slow and stable motion
When recording, keep your body stable.

An unstable shot will be magnified on the TV screen. Move the camcorder as slow as possible. As most of the object underwater move, you can record a good program without moving the camcorder.

Underwater video light
In deep water or under locks where direct sunlight does not reach, recording with an underwater video lights is recommended.

To record at night, use a powerful underwater video light.



Note on recording underwater
- Be sure to follow the safety rules for diving, such as diving period and depth.
- Remove the bubbles from the outside of the front glass before recording.

1. Concerning Defects

Marine Pack defects are classified as the three following types.

1) Operational defects

This type mainly involves malfunctions caused by electrical circuit or parts defects. Repair is the same as for normal products.

2) Damaged and missing parts

Waterproofing is sometimes affected by the locations of defects and symptoms. Before making repairs, always use the check list to check the type of defect.

Note : Refer to page 8 for the check list.

3) Water leaks

After the discovery of a defect or after making repairs, it is necessary to perform either a hydraulic pressure test or simple water leak test using a water tank.

2. Concerning Water Leaks

To ensure waterproofing, O-rings are used in the holes in the Marine Pack housing for openings, shafts, display windows and the front glass. Water leaks are possible in any of these locations but the conditions under which water leaks occur differ for the openings and the other parts.

1) Water leaks at openings

Openings are waterproofed using O-rings compressed by the force of the buckle spring.

Near the surface of the water, where little water pressure is applied to Marine Pack, the force of the buckle alone provides sufficient waterproofing. As the water pressure applied to Marine Pack increases at greater depths, however, the force applied to the O-rings increases due to the water pressure to increase the waterproofing.

Because of this, due to the type of waterproofing construction used, opening water leaks are more prone to occur in shallow water (approx. 2 meters) than in deep water. Also, since there is a gap between the front and rear housings, sand and dirt tend to enter and adhere to the O-ring in shallow water. When the cover is opened, this sand and dirt can then enter under the O-ring and cause a water leak the next time Marine Pack is used.

This, most water leaks in the openings are the result of adhered dirt, sand, hair and other foreigh matter as well as O-ring and housing damage due to careless handing.

2) Water leaks at other openings

Parts where there are holes in the housing (shafts, display window, front and rear glass) are constructed with O-rings mechanically compressed by screws and nuts.

Due to the construction, these places cannot be reached with the hands : therefore, the waterproofing is more secure than that of the openings.

The causes of water leaks are damage of the parts compressing the O-rings, loosening of the screws and nuts fastening the parts and improper reassembly.

3. Water Leak Check Methods

After the discovery and repair of water leak, it is necessary to perform a hydraulic pressure test and water leak test using a water tank.

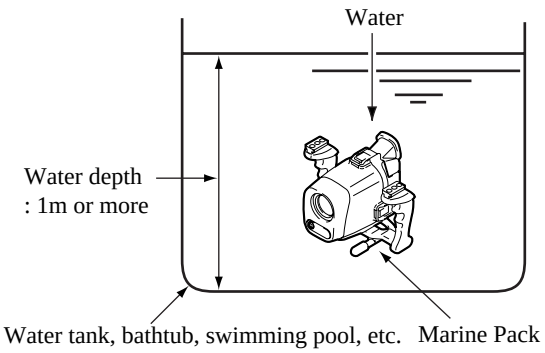
1) Opening water leak check method

As was mentioned above, due to the construction, water leaks in openings are more prone to occur in shallow water than in deep water. Consequently, a simple water leak test using a water tank is sufficient in many cases, without performing a hydraulic pressure test.

***Water leak test**

In this method, Marine Pack immersed in a tank filled with water and checked for water leaks.

Marine Pack should be left immersed in the water tank (or bathtub, swimming pool, etc.) for at least 15-20 minutes with the covers closed. The water depth should be at least 1 meter.



2) Water leak check methods for other waterproofed locations.

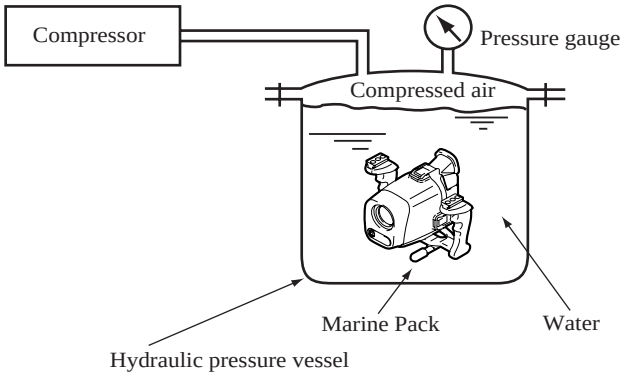
In addition to water leaks caused by damaged parts and loose screws, there are also water leaks at other waterproofed locations which cannot be detected with a water leak test : therefore, the hydraulic pressure test must be used.

****Hydraulic pressure test**

In this test, Marine Pack is immersed in a water tank called a hydraulic pressure vessel, pressure is applied using compressed air and checks are made for water leaks and the ability to withstand water pressure is tested.

Extreme pressure is applied to Marine Pack underwater.

Water leaks may occur when this pressure is first applied. In such cases, the water leak check must be made using the hydraulic pressure test with a hydraulic pressure vessel.



4. Causes of Water Leaks (excluding parts damage)

Water leaks in openings

1) When the covers have been closed with sand, dirt and hair adhered to the O-rings, O-ring grooves, housing O-ring contact surface or waterproof packing.
2) When the cover is closed with an O-ring out of its groove or a cord is caught in the cover.
3) When an O-ring is damaged or cracked (aging).
4) When there is a long scratch which crosses the housing O-ring contact surface.
5) When a cover is not tightly closed due to a defective buckle.

• Water leaks at other waterproofed locations

6) When there are scratches on the surfaces of the parts which compress the O-rings.
7) When the Parts which compress are loose.
8) When tightening with sand, dirt and hair adhered to an O-ring or part which compresses the O-ring.
9) When an O-ring has not been installed.

Causes 1)-5) and 9) above can be discovered relatively easily using the water leak test described above.

5. Causes of Water Leaks (excluding parts damage)

Water leaks in openings

1) When the covers have been closed with sand, dirt and hair adhered to the O-rings, O-ring grooves, housing O-ring contact surface or waterproof packing.
2) When the cover is closed with an O-ring out of its groove or a cord is caught in the cover.
3) When an O-ring is damaged or cracked (aging).
4) When there is a long scratch which crosses the housing O-ring contact surface.
5) When a cover is not tightly closed due to a defective buckle.

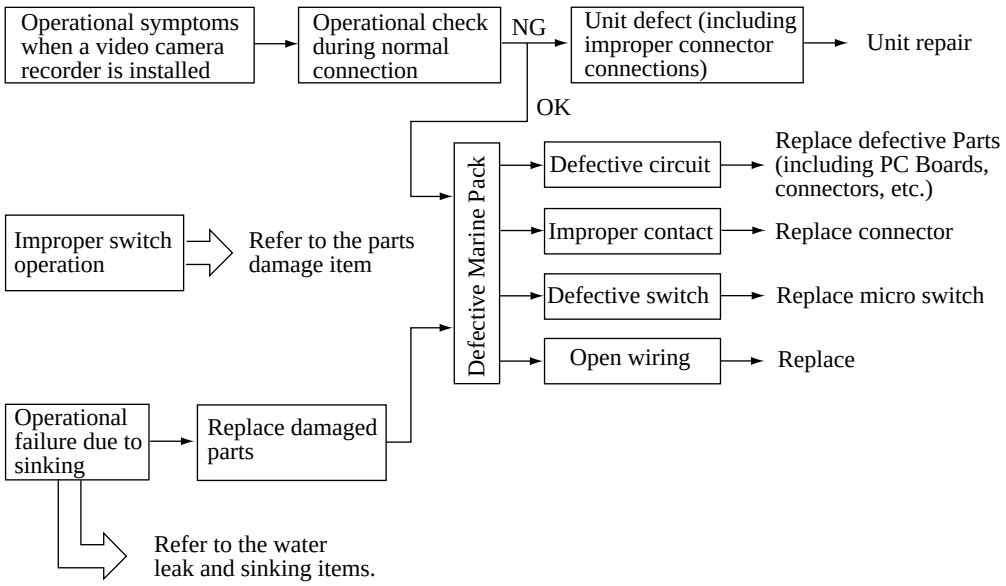
• Water leaks at other waterproofed locations

6) When there are scratches on the surfaces of the parts which compress the O-rings.
7) When the Parts which compress are loose.
8) When tightening with sand, dirt and hair adhered to an O-ring or part which compresses the O-ring.
9) When an O-ring has not been installed.

Causes 1)-5) and 9) above can be discovered relatively easily using the water leak test described above.

6. Repair Location and Hydraulic Pressure Test

When a defect is discovered or a repair is made at a location related to the waterproofness of Marine Pack, the hydraulic pressure test must be performed. Repairs at locations which require the hydraulic pressure test, and the hydraulic pressure test itself, are performed at the factory : therefore, always check the type of defect using the check list before making repairs.

Type of defect	Defect location and repair method	Hydraulic pressure test
Improper operation		Unnecessary

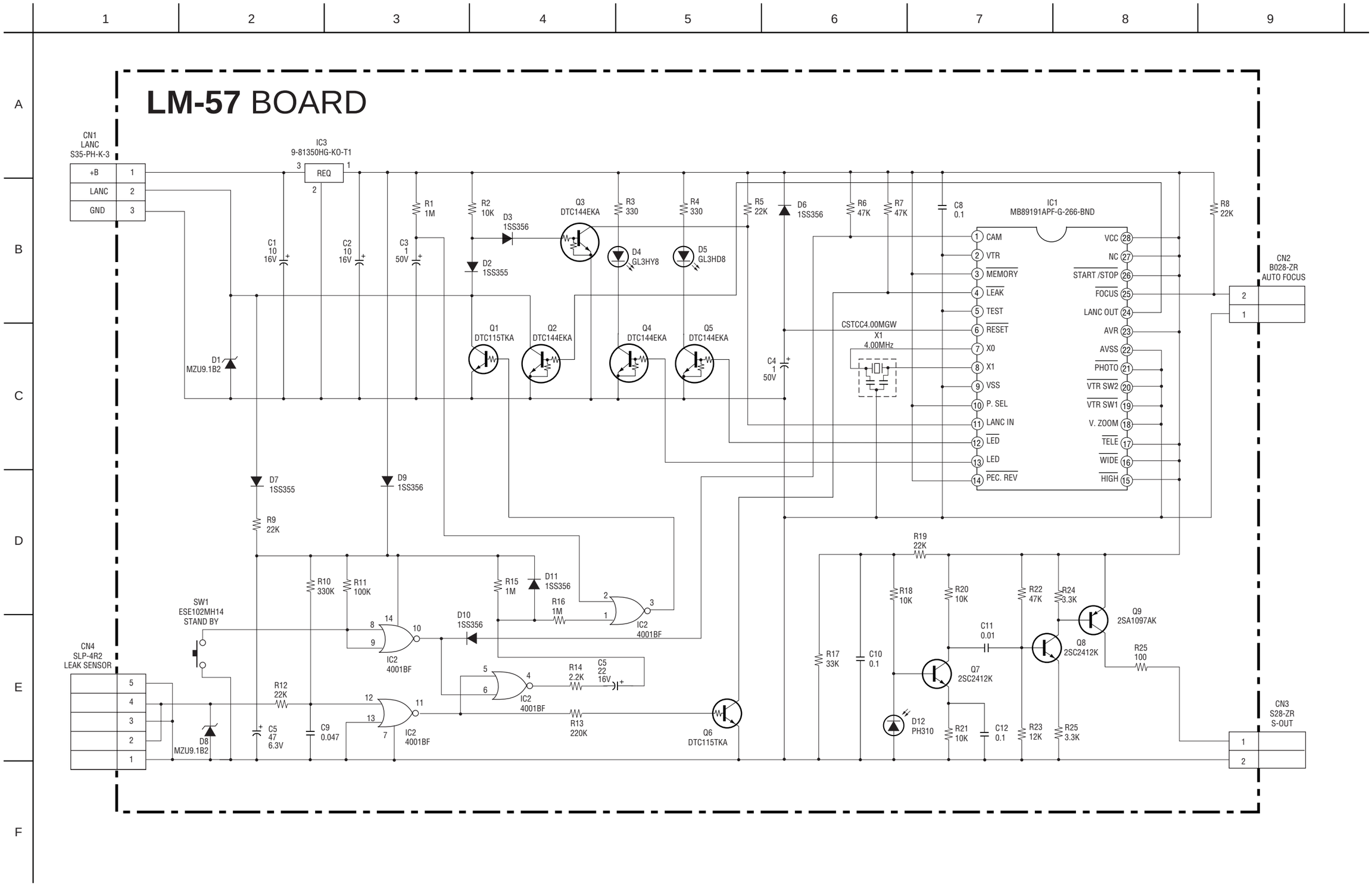
Type of defect	Defect location / symptom			Repair method	Hydraulic pressure test
Parts damage	Housing related	Exterior part	Scratch	Replace part	Necessary
		Waterproofing O-ring	Light damage	Polish using waterproof sandpaper	Necessary
			Heavy damage	Replace part	
		O-ring	Scratch, agin	Replace part (life : 2 years)	Unnecessary
		Buckle (including mounting screw)	Damage or coming off	Replace part (repair housing when screws are affected)	Unnecessary
		Underwater microphone	Damage	Replace part	Necessary
	Grip area	Deformation, damage	Light damage	Replace part	Unnecessary
			Heavy damage	Housing repair (overhaul mounting section)	Unnecessary
	Front glass section	Front glass	Damage	Replace part	Necessary
	Rear glass section	Eye cap	Damage, loss	Replace part	Unnecessary
		Rear glass	Damage	Replace part	Necessary
	(Switch related) REC START / STOP switch (button)* ZOOM switch (button)* PHOTO switch (button)* AUTO FOCUS ON / OFF switch (button) POWER switch (lever)	Lever Button Switch	Deformation, scratch, damage or coming off	Replace part	Necessary
	Video camera recorder mounting base area	Camera mount	Damage	Replace part	Unnecessary
		Water leakage sensor box.	Damage	Replace part	Unnecessary
Sinking due to water leak	Determine cause using the hydraulic pressure test			Repair the defect or replace the part.	Necessary

Note : Parts with an * mark are incorporated into the right grip and cannot be detached so the right grip must be replaced as one set.

SECTION 2
SCHEMATIC DIAGRAM

2-1. SCHEMATIC DIAGRAM

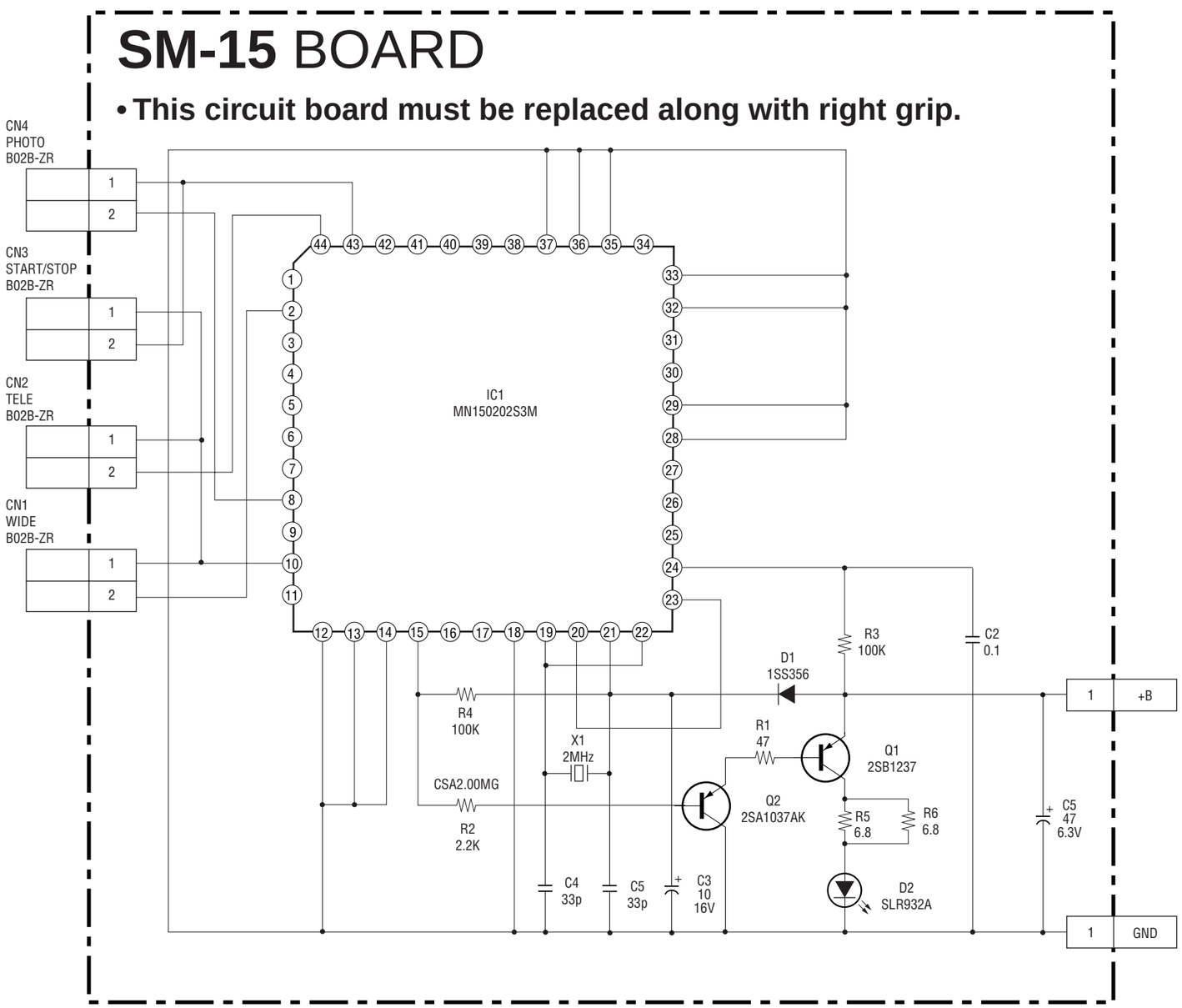
LM-57 • **The LM-57 board is not listed on the schematic due to its substitution.**



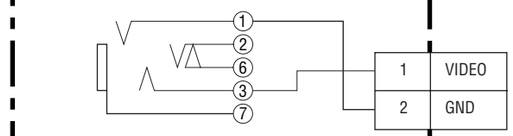
DZ-3 LL-8 LL-9 SM-15 • The DZ-3, LL-8, LL-9 boards is not listed on the schematic due to its substitution.

SM-15 BOARD

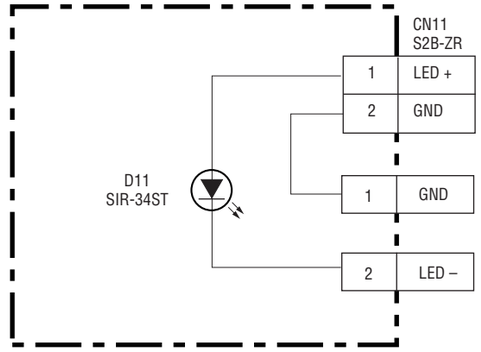
• This circuit board must be replaced along with right grip.



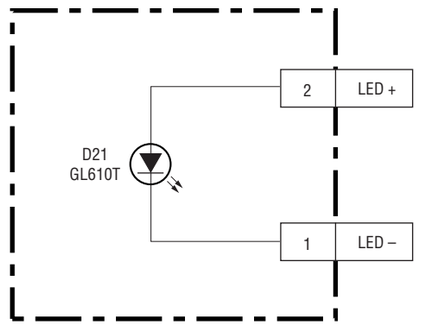
DZ-3 BOARD



LL-8 BOARD



LL-9 BOARD



Note on Schematic Diagram :

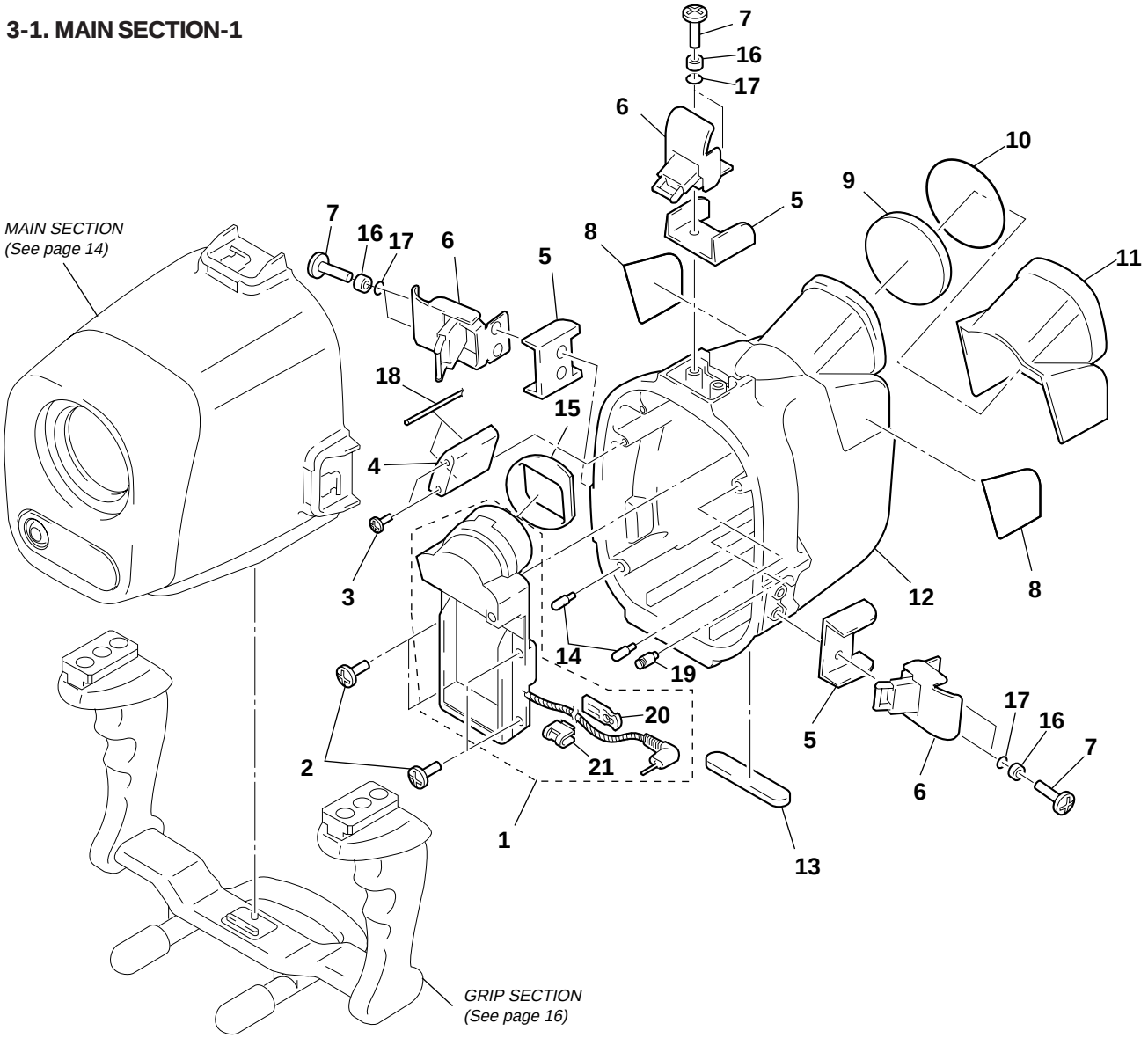
- All capacitors are in µF unless otherwise noted. pF: µµF
  50WV or less are not indicated except for electrolytics and tantalums.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
- Chip resistors are 1/10W unless otherwise noted.
  kW = 1000W, MW = 1000kW

SECTION 3
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

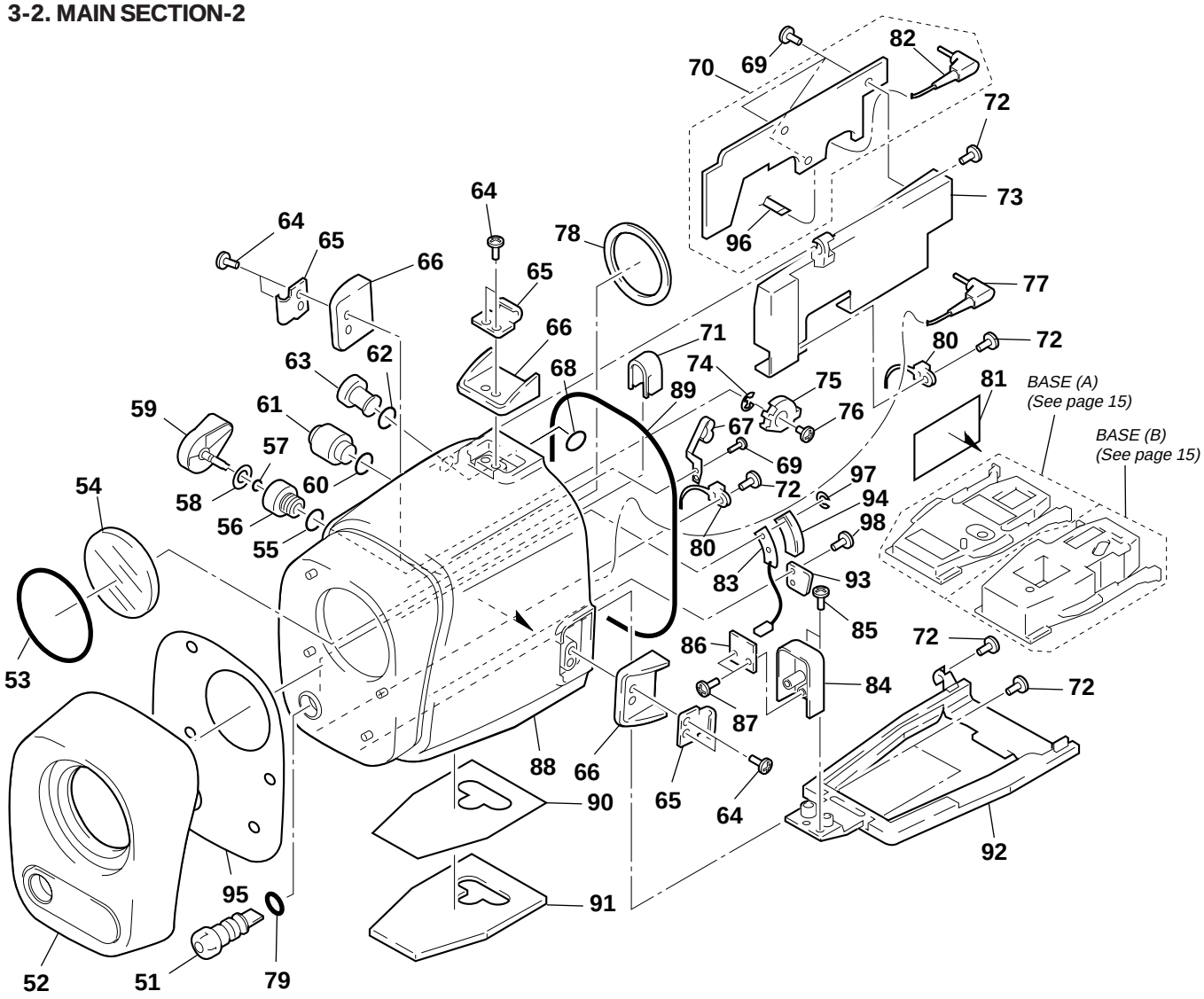
Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

3-1. MAIN SECTION-1



Ref. No.	Part No.	Description	Remark
1	A-7007-341-A	MONITOR ASSY (US, Canadian)	
1	A-7007-432-A	MONITOR ASSY (AEP)	
2	3-977-369-01	SCREW, +P M3X8	
3	3-052-092-01	SCREW, +P M2.6	
4	3-051-577-01	COVER, FIBER	
5	3-976-710-11	COVER (R), BUCKLE	
! 6	2-390-778-02	BUCKLE	
7	3-977-370-11	SCREW, +P M3.5X10	
8	3-977-994-01	SHEET, REAR PROTECTOR ADHESIVE	
! 9	3-976-695-01	GLASS, REAR	
! 10	3-977-361-01	RING (G58), O	
! 11	3-976-694-01	PROTECTOR, REAR CASE	
! 12	3-051-575-01	CASE, REAR	
13	3-976-698-01	FOOT, MAIN RUBBER	
14	3-977-265-01	PIN, POSITIONING	
! 15	3-977-996-01	PACKING, LCD	
16	3-052-426-01	COLLAR, PUNCH LOCK STOPPER	
! 17	3-052-427-01	RING (S-5), O	
18	3-051-698-01	FIBER, PLASTIC	
19	3-051-583-01	PIN, CABLE FIXED	
* 20	3-051-584-01	STRAP (A), CABLE	
* 21	3-051-585-01	STRAP (B), CABLE	

3-2. MAIN SECTION-2



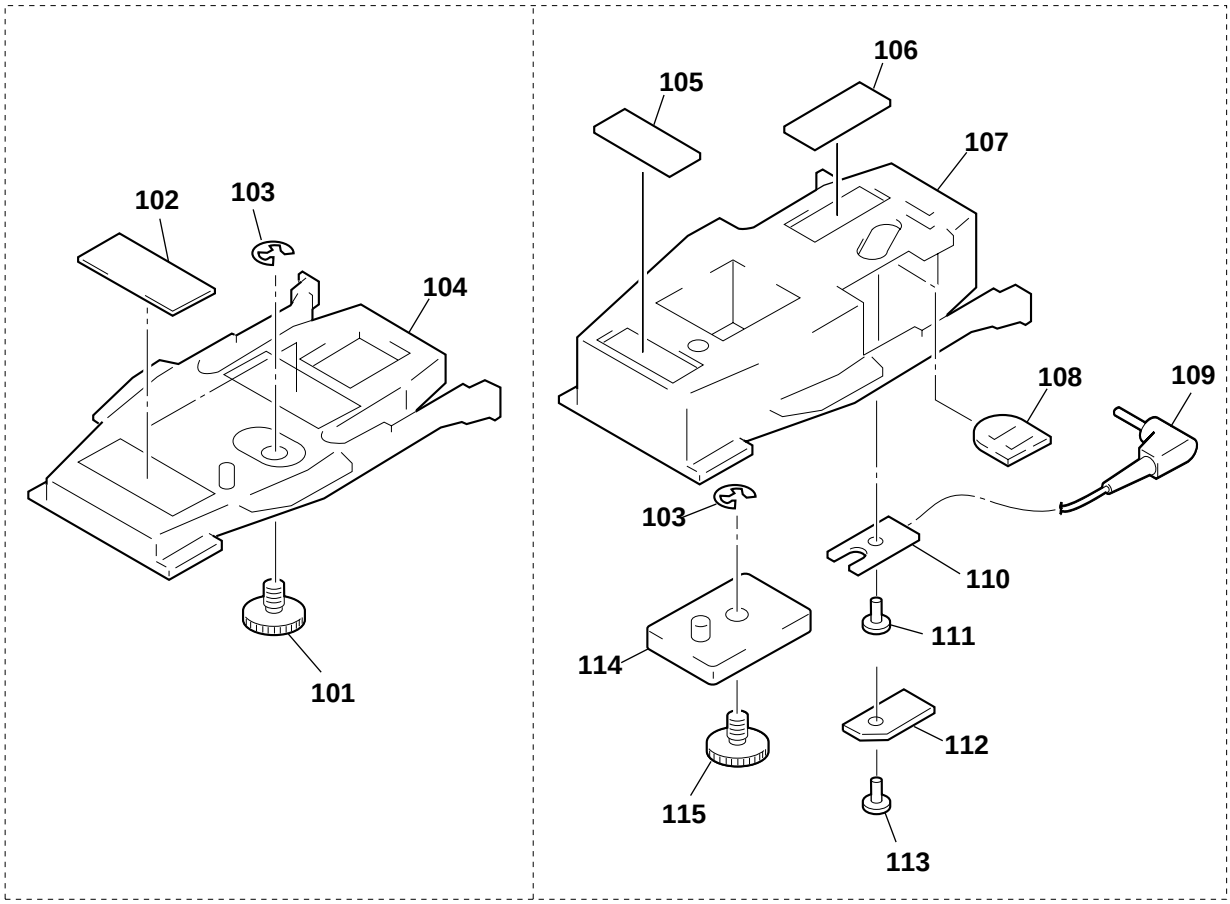
Ref. No.	Part No.	Description	Remark
51	A-7007-751-A	MICROPHONE ASSY, UNDERWATER	
52	3-976-665-01	PROTECTOR, FRONT CASE	
! 53	3-977-360-01	RING (G55), O	
! 54	3-976-668-01	GLASS, FRONT	
! 55	3-977-363-01	RING (JAS01011), O	
56	3-976-681-01	SWITCH (BEARING), POWER	
! 57	3-977-357-01	RING (P-3), O	
58	3-977-915-01	WAVE, WASHER	
59	3-976-669-11	LEVER, POWER	
! 60	3-950-888-01	RING (P-11), O	
61	X-3942-412-1	BUTTON ASSY, AF SELECTION	
! 62	3-950-858-01	RING (P-9), O	
63	3-976-680-01	WINDOW, SENSOR	
64	3-977-370-01	SCREW, +P M3.5X10	
! 65	2-115-906-01	RETAINER, BUCKLE	
66	3-976-711-01	COVER (F), BUCKLE	
67	3-051-559-01	SPRING, POWER SWITCH	
! 68	3-950-907-01	RING (S-8), O	
69	3-977-366-01	SCREW, +P M2	
70	A-7073-650-A	LM-57 BOARD, COMPLETE	
71	3-976-682-01	COVER, MICROPHONE	
72	3-977-369-01	SCREW, +P M3X8	
73	3-051-599-01	COVER, INNER	
74	2-391-512-01	E RING, 5	

Ref. No.	Part No.	Description	Remark
75	3-051-574-01	CAM, POWER LEVER	
76	3-977-368-11	SCREW, +P M2.6	
77	1-696-932-51	CORD, CONNECTION (MIC)	
78	3-051-586-01	PROTECTOR, FRONT LENS	
! 79	3-950-846-01	RING (P-7), O	
80	3-977-269-01	INSULOCK (T18 MRW)	
81	3-052-219-01	GUARD, CAMERA	
82	1-696-933-71	CORD, CONNECTION (LANC)	
83	A-7073-652-A	LL-9 BOARD, COMPLETE	
84	3-977-974-01	COVER, LED BOARD	
85	3-978-338-01	SCREW, +P M2X5 BT	
86	A-7073-651-A	LL-8 BOARD, COMPLETE	
87	3-977-366-01	SCREW, +P M2X4 BT	
! 88	3-976-664-11	CASE, FRONT	
! 89	3-977-362-01	RING (V145), O	
90	3-977-972-01	SHEET, GUARD RUBBER ADHESIVE	
91	3-977-264-01	GUARD RUBBER	
92	3-976-666-01	RAIL, BASE	
93	3-051-601-01	COVER, CABLE	
94	3-051-602-01	COVER, FRONT SENSOR	
! 95	3-977-995-01	SHEET, FRONT PROTECTOR ADHESIVE	
96	1-696-021-31	WIRE (LEAK SENSOR)	
97	3-052-220-01	RING (GTW-2), GRIP MOLD STOPPER	
98	3-977-369-21	SCREW, +P M3	

3-3. BASE (A), (B)

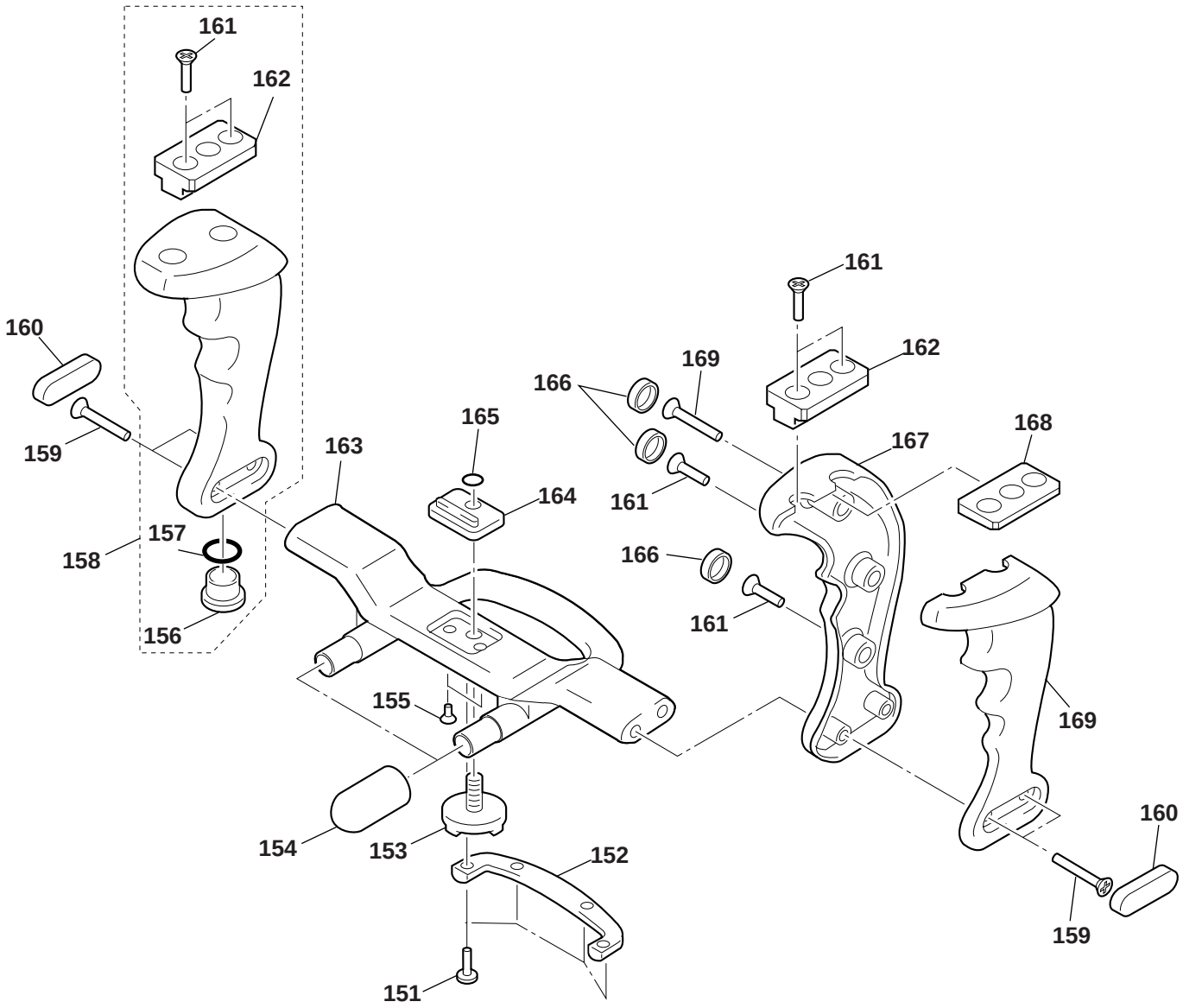
BASE (A) : DCR-TRV7

BASE (B) : DCR-TRV9



Ref. No.	Part No.	Description	Remark
* 101	3-970-217-01	SCREW, CAMERA FITTING	
102	3-964-843-01	SHEET, PROTECTION	
103	2-391-512-01	E RING, 5	
104	3-976-671-01	BASE	
105	3-052-491-01	SHEET (B), PROTECTION	
* 106	3-971-661-01	SHEET (A), PROTECTION	
107	3-051-582-01	BASE (B)	
108	3-953-086-01	BRACKET	
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	
110	A-7073-655-A	DZ-3 BOARD, COMPLETE	
111	3-052-092-01	SCREW, +P M2X6	
112	3-051-587-01	COVER, AV JACK	
113	3-977-366-11	SCREW, +P M2	
114	3-051-579-01	BASE, SLIDE (PLATE, SCREW)	
115	3-960-767-01	SCREW, CAMERA FITTING	

3-4. GRIP SECTION



Ref. No.	Part No.	Description	Remark
151	3-977-371-01	SCREW, +P M4X8	
152	3-976-691-01	FOOT, KEEL	
153	3-976-690-01	KNOB, TRIPOD SCREW	
154	3-976-689-01	FOOT, KEEL RUBBER	
155	2-186-307-01	SCREW (2) (M3X8), TAPPING	
156	3-945-010-01	LID, BATTERY REPLACEMENT	
! 157	3-945-087-01	RING, O	
158	A-7007-753-A	GRIP (R) ASSY	
159	3-944-944-11	SCREW, +K (5X30)	
160	3-945-020-01	COVER, GRIP	

Ref. No.	Part No.	Description	Remark
161	3-944-944-01	SCREW, +K (5X18)	
162	3-944-943-01	SHOE, ACCESSORY	
163	3-976-688-01	KEEL	
164	3-976-692-01	FIXED (LARGE)	
! 165	3-950-887-01	RING (P-4), O	
166	3-946-347-01	COVER (2), GRIP	
167	3-945-019-01	GRIP (L P)	
168	3-945-011-01	BRACKET, ACCESSORY SHOE	
169	3-945-013-01	GRIP (L D)	

SECTION 4
ELECTRICAL PARTS LIST

DZ-3 LL-8 LL-9 LM-57

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
	A-7073-655-A	DZ-3 BOARD, COMPLETE **********	
	A-7073-651-A	LL-8 BOARD, COMPLETE **********	
	A-7073-652-A	LL-9 BOARD, COMPLETE **********	
	A-7073-650-A	LM-57 BOARD, COMPLETE **********	
		MISCELLANEOUS **********	
77	1-696-932-51	CORD, CONNECTION (MIC)	
82	1-696-933-71	CORD, CONNECTION (LANC)	
96	1-696-021-31	WIRE (LEAK SENSOR)	
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS **********	
	A-7007-757-A	FILTER BLOCK ASSY	
	2-115-921-01	GREASE	
	3-051-636-01	CONVERSION (MAIN). WIDE	
	3-864-446-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH)(US/CND)	
	3-864-446-21	MANUAL, INSTRUCTION (ENGLISH/FRENCH/GERMAN/SPANISH) (AEP)	
	3-864-446-31	MANUAL, INSTRUCTION (DUTCH/SWEDISH/ITALIAN/PORTUGUESE) (AEP)	
	3-864-446-41	MANUAL, INSTRUCTION (RUSSIAN/ARABIC/CHINESE/KOREAN) (AEP)	
*	3-976-684-11	CUSHION (UPPER)	
*	3-976-685-11	CUSHION (LOWER)	
	3-976-762-01	CASE, SOFT CARRYING	
!	3-977-362-01	RING, (V145) O	
	3-977-715-01	HOOD, LIGHT INTERCEPTION	
	3-977-971-01	CARRYING BELY	
	3-989-362-01	REFLEX PREVENTION RING	
**	NP-F330 BATTERY PACK		

Note .
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

9-974-083-11

Sony Corporation
Personal A&V Products Company

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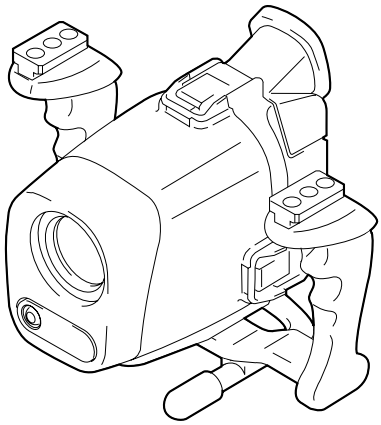
(Osaki East)

MPK-DVF

SERVICE MANUAL

Ver 1.0 1998.06

US Model
Canadian Model
AEP Model



SPECIFICATIONS

Material
Aluminum alloy, glass, plastic

Waterproofing
O-ring, 3 buckles

Usable depth
Up to 75 meters (246 feet)

Underwater microphone
Condenser microphone (monaural)

Controllable function
Power on/off, recording start/stop, auto focus on/off, power zooming, photo recording (DCR-TRV9 only)

Dimensions
Approx. 297 x 212 x 318 mm (w/h/d)
(11 3/4 x 8 3/8 x 12 5/8 in.)

Mass
Approx. 4.2 kg (9 lb 5 oz)

Supplied accessories
Camera mounting shoe A (1)
Camera mounting shoe B (1)
Screw plate (1)
Screw driver part (1)
Battery cushion (1)
O-ring (1)
Grease (1)
NP-F330 battery pack for the monitor (1)
R6 (size AA) battery (2)
Sunshade (1)
Color filter (1)
Reflex prevention ring (1)
Underwater wide-conversion lens (1)
Carrying bag (1)
Carrying belt (1)
Operating instructions (1)
Strap (3)

Recommended accessory
Underwater video light HVL-ML20

Design and specifications are subject to change without notice.

MARINE PACK

MICROFILM

SONY®

SECTION 1
GENERAL

This section is extracted from instruction manual.

Features and Precautions

EN

- MPK-DVF can be used with the Sony Handycam Vision™ camcorder DCR-TRV7/ TRV9 (NTSC), DCR-TRV7E/ TRV9E (PAL)
- Recording at a depth of 75 meters (246 feet) is possible.
- The following operation can be performed underwater.
  - Power on/off
  - Auto focusing on/off
  - Recording start/stop
  - Photo recording (DCR-TRV9 only)
  - Electric zoom function
  - Monitoring on the LCD screen

We recommend you use the supplied wide-conversion lens when using the marine pack.

This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

On the video camera recording

- Take care not to expose the equipment to salty air. Do not drop water on the equipment.
- Do not open the marine pack underwater or at the beach. Preparation such as installing and checking the equipment should be done in a place with low humidity and no salty air.
- When your camcorder is to be used near the sea for a long time, we recommend that it be checked periodically by Sony dealer.
- If the equipment becomes wet, take it immediately to the nearest Sony dealer for preventive maintenance.
- We recommend you use battery packs with a large capacity.

Features and Precautions

On the marine pack

- If you open and join the front and rear shells in a place with high temperature and high humidity, moisture condensation may occur when you put the marine pack in the water, causing the front glass to fog.
  The waterproof integrity of the marine pack is maintained by the O-ring, and the groove and surface where it touches. Be especially careful not to damage or deform that area. For details, see "Note on the O-ring" (page 16).
- Do not leave the marine pack under direct sunlight for a long period of time, otherwise the temperature in the marine pack may rise and the equipment inside may be damaged. If you can not avoid leaving the marine pack under direct sunlight, be sure to cover the marine pack with a towel or other protection.
- Do not throw the marine pack into the water. Lower it gently into the water.

On recording underwater

- Checking that the equipment operates correctly and that there is no water leakage at a depth of about one meter (3 feet) before you dive deeper.
- Be sure to follow the safety rules for diving, such as diving period and depth.
- Remove the bubbles from the outside of the front glass before recording.

Sony dose not accept liability for damage to the video camera recorder, battery, etc. in the marine pack or for the loss of prerecorded material if a water leakage caused by incorrect operation occurs.

On maintenance

After recording in the sea, submerge the marine pack with the buckles tightly fastened in fresh water, then wipe with a soft dry cloth.

Clean your camcorder and the inside of the marine pack with a soft dry cloth. Do not use any type of solvent such as alcohol or benzine for cleaning, as this might damage the finish.

When you store the marine pack

- Coat the O-ring slightly with the supplied grease, and put it in the groove correctly. Join the front and rear shells then put in a cool and dry place without fastening the buckles.
- Prevent dust from collecting on the O-ring.
- Avoid storing the marine pack in a very hot, cold or humid place, or together with naphthalene or camphor, as these conditions might damage the unit.

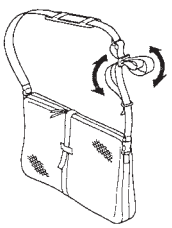
After using the marine pack

- Insert the A/V connecting cable plug to the plug holder of the camera mounting shoe B.
- Insert the remote and microphone plugs to the plug holder inside of the front shell.

Features and Precautions

Using the supplied carrying bag

Attach the supplied carrying belt and adjust the length of the belt.



EN

On transportation

- When transporting the marine pack, be sure to remove your camcorder from it.
- Avoid rough handling or a shock. We recommend to cover the marine pack with a towel or other protection.

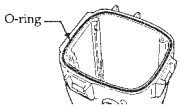
Removing the camcorder

After using

- Insert the A/V connecting cable plug to the plug holder of the camera mounting shoe B.
- Insert the remote and microphone plugs to the plug holder inside of the front shell.

Note on the O-ring

The O-ring assures the waterproof function of the marine pack. To maintain waterproof integrity, use it correctly. Incorrect handling may cause water to leak in.



Check the O-ring

Check that there are no scratches or cracks on the O-ring as they may allow water to leak in. If there are scratches or cracks, replace the damaged O-ring with a new one. Do not remove the O-ring from the groove with a metal tool or a tool with a sharp point.

Remove any dust, sand or hair from the O-ring.

Make sure there is no dust, sand or hair on the O-ring, in the groove, or on the surface of the marine pack where the O-ring touches. If there is, clean them completely, or the O-ring and the surface of the marine pack may be damaged and water may leak in.

Grease the O-ring

Check that there are no cracks or dust on the O-ring, then coat it slightly with the supplied grease using your finger. They will prevent wear. While applying the grease, recheck for cracks or dust.
Never use cloth or paper to apply grease because the fibers may cling.
Do not use any type of grease other than the supplied one, or it may damage the O-ring.
If you run out of silicone grease (2-115-921-01) you can purchase it from your nearest Sony Service Center.

Do not twist the O-ring

Put the O-ring in the groove evenly. Never twist it.

Do not pinch the O-ring with the marine pack

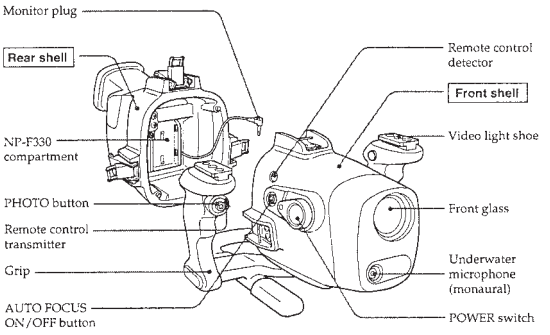
When jointing the front and rear shells, take care not to pinch the O-ring between the front and rear shells. If this happens, not only will the O-ring be damaged, but water may leak in.

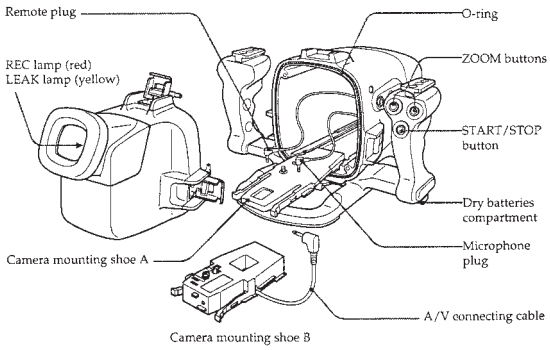
Useful life of the O-ring

Depending upon the maintenance and the length of use, we recommend changing the O-ring every one or two years.

The O-ring (3-977-362-01) can be replaced at your nearest Sony Service Center.

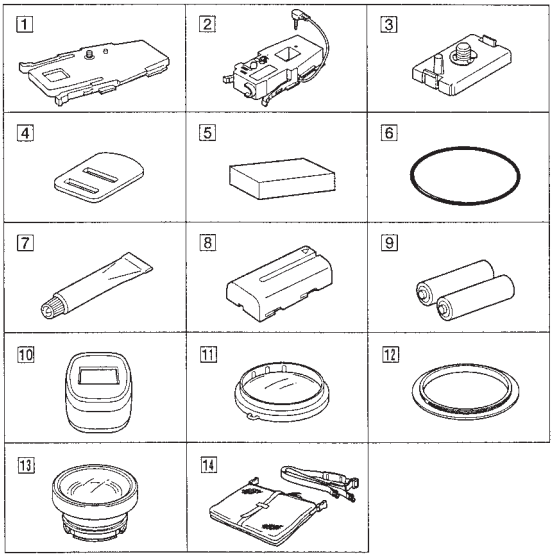
Labeling parts and controls





Checking supplied accessories

Check that the following accessories are supplied with your sports pack.



1 **Camera mounting shoe A** (1)
for DCR-TRV7
2 **Camera mounting shoe B** (1)
for DCR-TRV9
3 **Screw plate for camera mounting shoe B** (1)
4 **Screw driver part** (1)
The screw driver part is installed in the camera mounting shoe B.
5 **Battery cushion** (1)
6 **O-ring** (1)
7 **Grease** (1)
8 **NP-F330 battery pack for the LCD monitor** (1)
9 **R6 (size AA) battery** (2)
10 **Sunshade** (1)
11 **Color filter** (1)
12 **Reflex prevention ring** (1)
13 **Underwater wide-conversion lens** (1)
14 **Carrying bag** (1)
Carrying belt (1)
15 **Strap** (3)

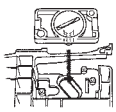
Preparing

1 Preparing the camcorder

The DCR-TRV9 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "DCR-TRV9 only".
For details, please refer to the operating instructions supplied with your camcorder.

(1) Remove the lens cap, shoulder strap, conversion lens or filter from the camcorder.
(2) Attach a charged battery pack.
(3) Insert a cassette tape.
(4) Attach the reflex prevention ring to the tip of the lens.
(5) Attach the camera mounting shoe A (for **DCR-TRV7**) or the camera mounting shoe B* (for **DCR-TRV9**).
Remove the metal part from the camera mounting shoe B and fasten the screw.
For **DCR-TRV9** only, connect the A/V connecting cable of the camera mounting shoe B to the camcorder's AUDIO/VIDEO jack.
(6) Adjust the camcorder.
(7) For DCR-TRV9 only, cancel the following functions: BACK LIGHT,NightShot, PROGRAM AE and picture effect.

*** To attach the camera mounting shoe B**
Attach the screw plate to the camera mounting shoe B.

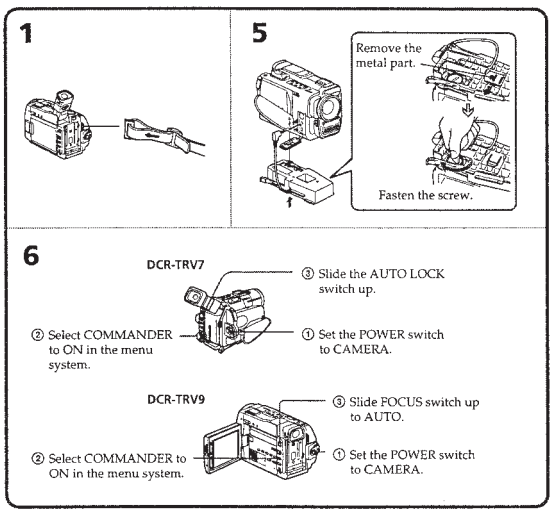


Installing positon of the screw plate

1	DCR-TRV9
2	———

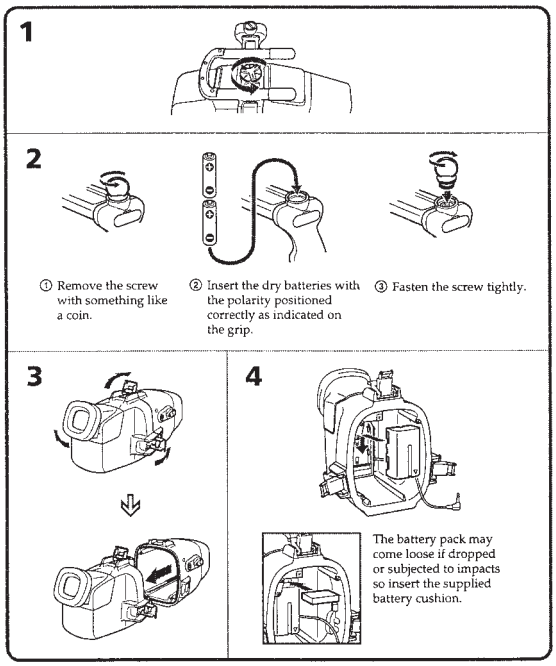
EN

Preparing


1
5
Remove the metal part.
Fasten the screw.
6
DCR-TRV7
③ Slide the AUTO LOCK switch up.
② Select COMMANDER to ON in the menu system.
① Set the POWER switch to CAMERA.
DCR-TRV9
③ Slide FOCUS switch up to AUTO.
② Select COMMANDER to ON in the menu system.
① Set the POWER switch to CAMERA.

2 Preparing the Marine Pack

(1) Remove the grip.
(2) Insert the dry batteries into the grip.
(3) Unfasten the 3 buckles and open the marine pack.
(4) Attach the supplied battery pack NP-F330 for the LCD monitor to the rear shell. Be sure to charge the battery pack fully before attaching.


1
2
① Remove the screw with something like a coin.
② Insert the dry batteries with the polarity positioned correctly as indicated on the grip.
③ Fasten the screw tightly.
3
4
The battery pack may come loose if dropped or subjected to impacts so insert the supplied battery cushion.

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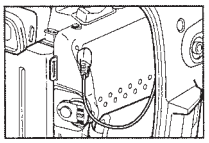
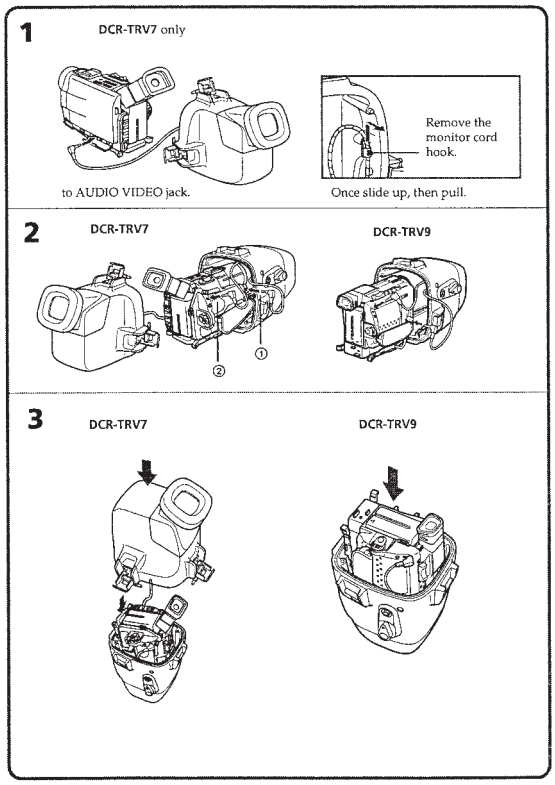
3 Attaching the camcorder to the marine pack

The cords are placed in the plug holders of the marine pack at the factory. Pull the plugs out of the holders when in use.

(1) For **DCR-TRV7** only, connect the monitor plug to AUDIO VIDEO jack.
(2) Connect the remote plug to LANC control (①) jack, and the microphone plug to MIC jack (plug in power) (②).
(3) Attach the camcorder.
Insert the camera mounting shoe until it clicks.
(4) For **DCR-TRV9** only, connect the monitor cord to the jack of camera mounting shoe B.
(5) Attach the front shell to the rear shell. Hold the both shells firmly and fasten 3 buckles securely.
Take care not to pinch the remote, microphone, and monitor cords. If this happens water may leak in.
(6) Attach the grip.



Note
To prevent the cords from twisting or slacking, make sure that these plugs are inserted as the correct direction as the illustration.



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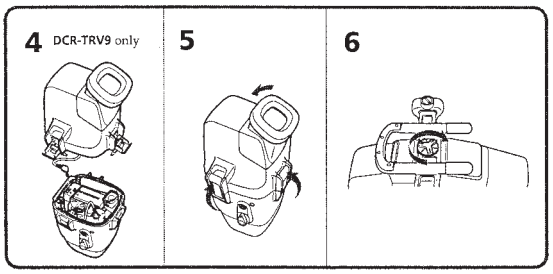


Now you ready for underwater recording. Be sure to check that there is no water leakage before you dive.

Tips for the LCD monitor

- The image does not appear on the LCD screen with only attaching the battery pack to the rear shell. The LCD screen is linked with the power of your camcorder.
- To display indicator on the LCD monitor
  Select V-OUT/LCD in the DISPLAY menu, and press the DISPLAY button on your camcorder before attaching it to the marine pack.
- Remaining battery time displayed on the LCD screen refers to the time how many minutes the battery of camcorder lasts. It is not the remaining battery time of the LCD monitor.

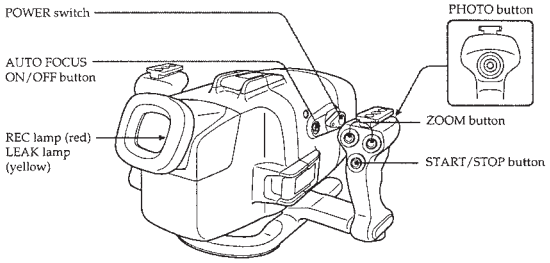
Tips for the supplied battery pack NP-F330

- The LCD monitor of the marine pack does not correspond with the "InfoLITHIUM" battery.
- What is the "InfoLITHIUM" battery pack.
  The "InfoLITHIUM" battery pack is a lithium battery pack which can exchange data with compatible video equipment about its battery consumption.
  When you use this battery pack with video equipment having the InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes.* However, if you use it with video equipment not having this mark, the remaining battery capacity will not indicated in minutes.
  * The indication may not be accurate depending on the condition and environment which the equipment is used under.

Note on dry batteries

- With normal operation, dry batteries will last for about 6 months.
- If the marine pack is not used for long period of time, remove the batteries to avoid possible damage from the battery leakage.
- Do not try to recharge dry batteries.
- If a battery leak should develop, carefully and thoroughly wipe away battery fluid from the battery compartment before inserting new ones.

Recording



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(1) Set POWER switch to ON.

(2) Press START/STOP button to start recording.
REC lamp (red) lights up during recording.

To stop recording
Press START/STOP button.

To zoom
Press ZOOM button.

Press T for telephoto (subject appears closer) and W for wide-angle (subject appears farther away).

You cannot change the zooming speed of the camcorder.

Note on Photo recording (DCR-TRV9 only)
If you press PHOTO button when a still picture appears on the LCD screen or in the viewfinder, the camcorder will record that still picture.
You cannot check the recorded picture by pressing PHOTO button lightly.

For details, please refer to the operating instructions supplied with your camcorder

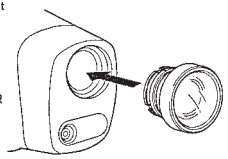
To keep a subject in focus
After you focus on a subject, press AUTO FOCUS ON/OFF button to set the camcorder to manual focus mode.

Even if fish swim between the camcorder and the subject, you can still keep the subject in focus.

Note on before recording
Check that the equipment operates correctly and that there is no water leakage at a depth of about one meter (3 feet) before you dive deeper.

Note on recording
Do not cover the control emitter or detector with your finger because the remote control signal for operations is transmitted from the grip to the marine pack.

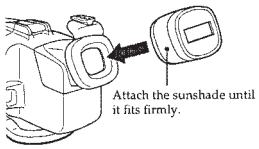
To attach the supplied wide-conversion lens
Attach the wide-conversion lens until it fits firmly.
You can attach the wide-conversion lens both on land and underwater.



Note
This wide-conversion lens is to be used only underwater.

When using the supplied color filter, attach it on top of the wide-conversion lens.

Using the supplied sunshade
The supplied sunshade for the LCD monitor reduces glare from the LCD monitor. Attach the sunshade as shown in the illustration.



You can attach the wide-conversion lens, sunshade, and color filter underwater
If the image on the LCD screen is not clear because of the air remains between these accessories and the marine pack, reattach them underwater.

When the LEAK lamp flashes

If water happen to leak in , the LEAK lamp (yellow) flashes.

In such a case, remove the marine pack from the water as soon as possible, keeping it horizontal. Be sure to surface following the safety rules for diving.

Dry the marine pack with a soft cloth and then open it.

To switch off the lamp, disconnect the remote control cable.

Check the cause of the leak.

If the camcorder is wet, take it to the nearest Sony dealer immediately.

Removing the camcorder

Before opening the marine pack, rinse it with fresh water and dry with a soft cloth.

Note
- When you open the marine pack, make sure you are dry. And take care that no water drips from your wet suit.
- When you open the marine pack, do not pull the monitor plug cord by force.

(1) Remove the grip.

(2) Unfasten 3 buckles and open the marine pack.
For **DCR-TRV9** only, disconnect the monitor cord from the camera mounting shoe B.

(3) Take the camcorder out of the front shell.
Holding the camera mounting shoe by the knobs and extract the camcorder.

(4) Disconnect the remote plug and the microphone plug.

(5) Disconnect the monitor plug (for **DCR-TRV7**), the A/V connecting cable of camera mounting shoe B (for **DCR-TRV9**) from AUDIO/VIDEO jack.
When you take the camcorder out of the shell, be careful not to pull the remote cord, microphone cord or A/V connecting cable.

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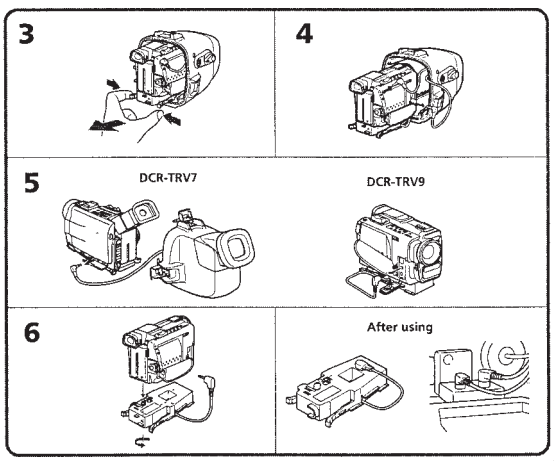
(6) Remove the camera mounting shoe.

(7) Remove the battery pack for the LCD monitor.

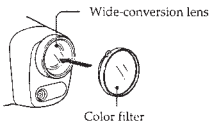


Underwater recording

Recording underwater is different from recording on land because it is affected by the clarity, depth of the water and the light condition. The following are hints for good recording underwater.

Color characteristic underwater
Water absorbs light, especially red light, so that objects in deep water are seen bluish. The color of objects is affected by the clarity of the water.

To record in natural color, use the supplied color filter.



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Best time for recording
The best recording time is from 10:00 a.m. to 2:00 p.m. When the sun its highest, optimum results can be obtained.

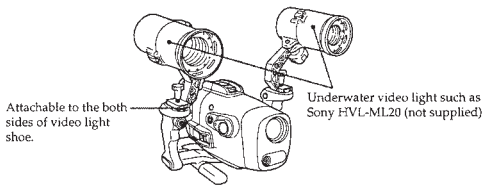
Subject size underwater
Since the refractive index underwater is higher than that in air, an object appears 1/4 more closer, and therefore larger. This phenomenon affects the lens on the camcorder as well as human eye. Using the supplied wide-conversion lens is recommended.

Camera work on slow and stable motion
When recording, keep your body stable.

An unstable shot will be magnified on the TV screen. Move the camcorder as slow as possible. As most of the object underwater move, you can record a good program without moving the camcorder.

Underwater video light
In deep water or under locks where direct sunlight does not reach, recording with an underwater video lights is recommended.

To record at night, use a powerful underwater video light.



Note on recording underwater
- Be sure to follow the safety rules for diving, such as diving period and depth.
- Remove the bubbles from the outside of the front glass before recording.

1. Concerning Defects

Marine Pack defects are classified as the three following types.

1) Operational defects

This type mainly involves malfunctions caused by electrical circuit or parts defects. Repair is the same as for normal products.

2) Damaged and missing parts

Waterproofing is sometimes affected by the locations of defects and symptoms. Before making repairs, always use the check list to check the type of defect.

Note : Refer to page 8 for the check list.

3) Water leaks

After the discovery of a defect or after making repairs, it is necessary to perform either a hydraulic pressure test or simple water leak test using a water tank.

2. Concerning Water Leaks

To ensure waterproofing, O-rings are used in the holes in the Marine Pack housing for openings, shafts, display windows and the front glass. Water leaks are possible in any of these locations but the conditions under which water leaks occur differ for the openings and the other parts.

1) Water leaks at openings

Openings are waterproofed using O-rings compressed by the force of the buckle spring.

Near the surface of the water, where little water pressure is applied to Marine Pack, the force of the buckle alone provides sufficient waterproofing. As the water pressure applied to Marine Pack increases at greater depths, however, the force applied to the O-rings increases due to the water pressure to increase the waterproofing.

Because of this, due to the type of waterproofing construction used, opening water leaks are more prone to occur in shallow water (approx. 2 meters) than in deep water. Also, since there is a gap between the front and rear housings, sand and dirt tend to enter and adhere to the O-ring in shallow water. When the cover is opened, this sand and dirt can then enter under the O-ring and cause a water leak the next time Marine Pack is used.

This, most water leaks in the openings are the result of adhered dirt, sand, hair and other foreigh matter as well as O-ring and housing damage due to careless handing.

2) Water leaks at other openings

Parts where there are holes in the housing (shafts, display window, front and rear glass) are constructed with O-rings mechanically compressed by screws and nuts.

Due to the construction, these places cannot be reached with the hands : therefore, the waterproofing is more secure than that of the openings.

The causes of water leaks are damage of the parts compressing the O-rings, loosening of the screws and nuts fastening the parts and improper reassembly.

3. Water Leak Check Methods

After the discovery and repair of water leak, it is necessary to perform a hydraulic pressure test and water leak test using a water tank.

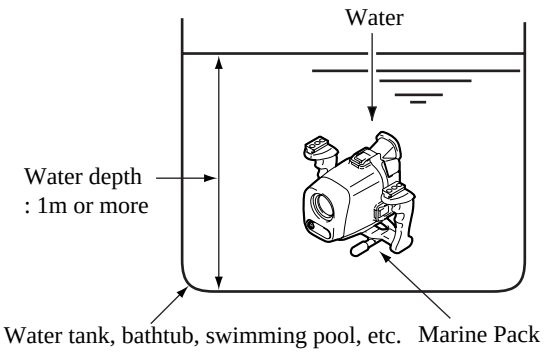
1) Opening water leak check method

As was mentioned above, due to the construction, water leaks in openings are more prone to occur in shallow water than in deep water. Consequently, a simple water leak test using a water tank is sufficient in many cases, without performing a hydraulic pressure test.

***Water leak test**

In this method, Marine Pack immersed in a tank filled with water and checked for water leaks.

Marine Pack should be left immersed in the water tank (or bathtub, swimming pool, etc.) for at least 15-20 minutes with the covers closed. The water depth should be at least 1 meter.



2) Water leak check methods for other waterproofed locations.

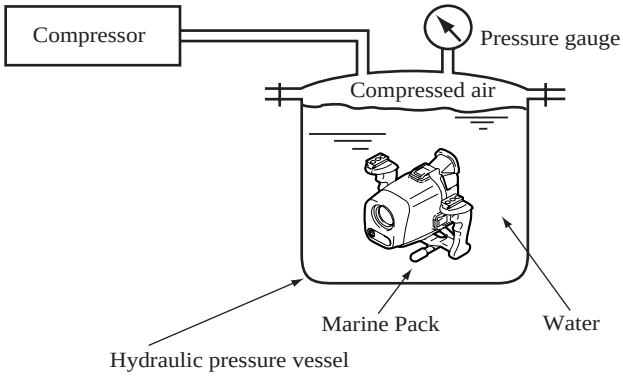
In addition to water leaks caused by damaged parts and loose screws, there are also water leaks at other waterproofed locations which cannot be detected with a water leak test : therefore, the hydraulic pressure test must be used.

****Hydraulic pressure test**

In this test, Marine Pack is immersed in a water tank called a hydraulic pressure vessel, pressure is applied using compressed air and checks are made for water leaks and the ability to withstand water pressure is tested.

Extreme pressure is applied to Marine Pack underwater.

Water leaks may occur when this pressure is first applied. In such cases, the water leak check must be made using the hydraulic pressure test with a hydraulic pressure vessel.



4. Causes of Water Leaks (excluding parts damage)

Water leaks in openings

1) When the covers have been closed with sand, dirt and hair adhered to the O-rings, O-ring grooves, housing O-ring contact surface or waterproof packing.
2) When the cover is closed with an O-ring out of its groove or a cord is caught in the cover.
3) When an O-ring is damaged or cracked (aging).
4) When there is a long scratch which crosses the housing O-ring contact surface.
5) When a cover is not tightly closed due to a defective buckle.

• Water leaks at other waterproofed locations

6) When there are scratches on the surfaces of the parts which compress the O-rings.
7) When the Parts which compress are loose.
8) When tightening with sand, dirt and hair adhered to an O-ring or part which compresses the O-ring.
9) When an O-ring has not been installed.

Causes 1)-5) and 9) above can be discovered relatively easily using the water leak test described above.

5. Causes of Water Leaks (excluding parts damage)

Water leaks in openings

1) When the covers have been closed with sand, dirt and hair adhered to the O-rings, O-ring grooves, housing O-ring contact surface or waterproof packing.
2) When the cover is closed with an O-ring out of its groove or a cord is caught in the cover.
3) When an O-ring is damaged or cracked (aging).
4) When there is a long scratch which crosses the housing O-ring contact surface.
5) When a cover is not tightly closed due to a defective buckle.

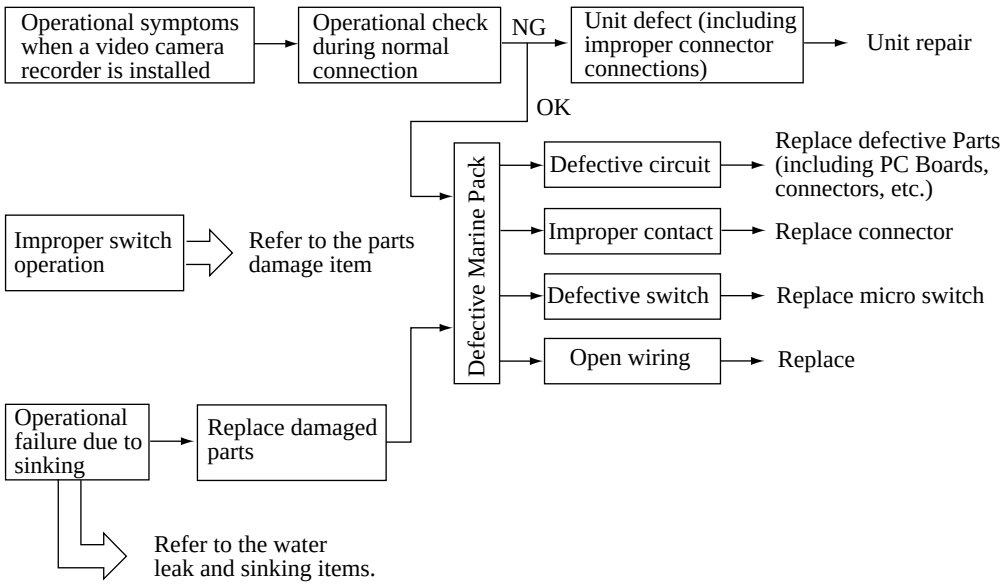
• Water leaks at other waterproofed locations

6) When there are scratches on the surfaces of the parts which compress the O-rings.
7) When the Parts which compress are loose.
8) When tightening with sand, dirt and hair adhered to an O-ring or part which compresses the O-ring.
9) When an O-ring has not been installed.

Causes 1)-5) and 9) above can be discovered relatively easily using the water leak test described above.

6. Repair Location and Hydraulic Pressure Test

When a defect is discovered or a repair is made at a location related to the waterproofness of Marine Pack, the hydraulic pressure test must be performed. Repairs at locations which require the hydraulic pressure test, and the hydraulic pressure test itself, are performed at the factory : therefore, always check the type of defect using the check list before making repairs.

Type of defect	Defect location and repair method	Hydraulic pressure test
Improper operation		Unnecessary

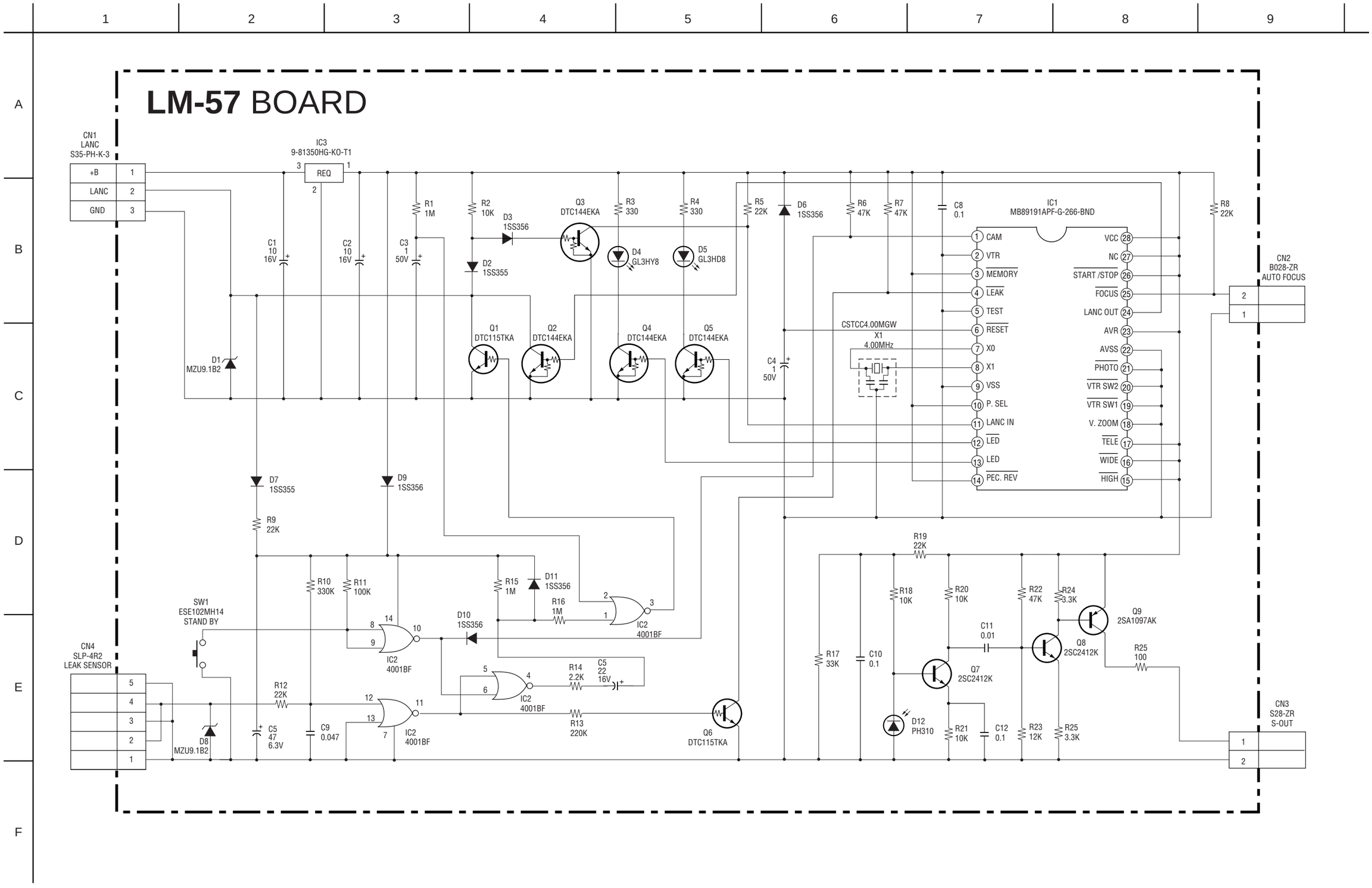
Type of defect	Defect location / symptom			Repair method	Hydraulic pressure test
Parts damage	Housing related	Exterior part	Scratch	Replace part	Necessary
		Waterproofing O-ring	Light damage	Polish using waterproof sandpaper	Necessary
			Heavy damage	Replace part	
		O-ring	Scratch, agin	Replace part (life : 2 years)	Unnecessary
		Buckle (including mounting screw)	Damage or coming off	Replace part (repair housing when screws are affected)	Unnecessary
		Underwater microphone	Damage	Replace part	Necessary
	Grip area	Deformation, damage	Light damage	Replace part	Unnecessary
			Heavy damage	Housing repair (overhaul mounting section)	Unnecessary
	Front glass section	Front glass	Damage	Replace part	Necessary
	Rear glass section	Eye cap	Damage, loss	Replace part	Unnecessary
		Rear glass	Damage	Replace part	Necessary
	(Switch related) REC START / STOP switch (button)* ZOOM switch (button)* PHOTO switch (button)* AUTO FOCUS ON / OFF switch (button) POWER switch (lever)	Lever Button Switch	Deformation, scratch, damage or coming off	Replace part	Necessary
	Video camera recorder mounting base area	Camera mount	Damage	Replace part	Unnecessary
		Water leakage sensor box.	Damage	Replace part	Unnecessary
Sinking due to water leak	Determine cause using the hydraulic pressure test			Repair the defect or replace the part.	Necessary

Note : Parts with an * mark are incorporated into the right grip and cannot be detached so the right grip must be replaced as one set.

SECTION 2
SCHEMATIC DIAGRAM

2-1. SCHEMATIC DIAGRAM

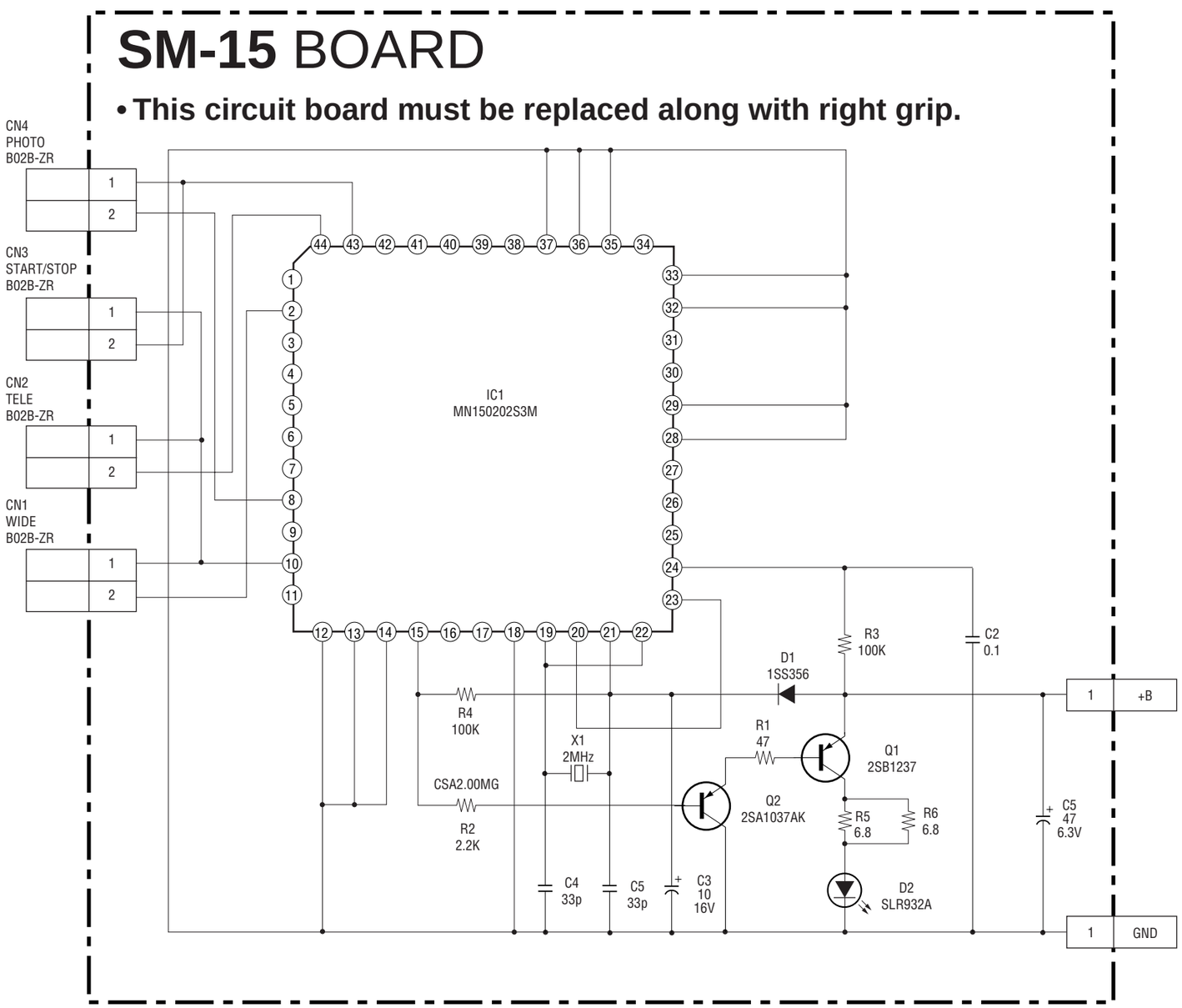
LM-57 • **The LM-57 board is not listed on the schematic due to its substitution.**



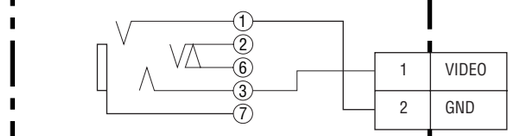
DZ-3 LL-8 LL-9 SM-15 • The DZ-3, LL-8, LL-9 boards is not listed on the schematic due to its substitution.

SM-15 BOARD

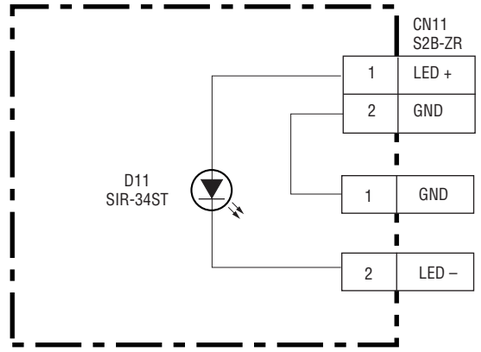
• This circuit board must be replaced along with right grip.



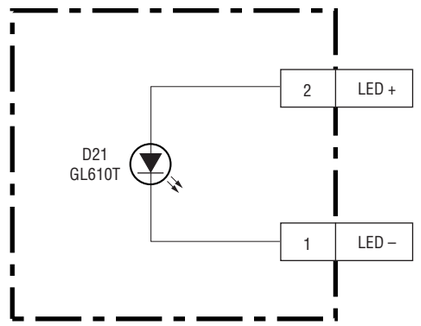
DZ-3 BOARD



LL-8 BOARD



LL-9 BOARD



Note on Schematic Diagram :

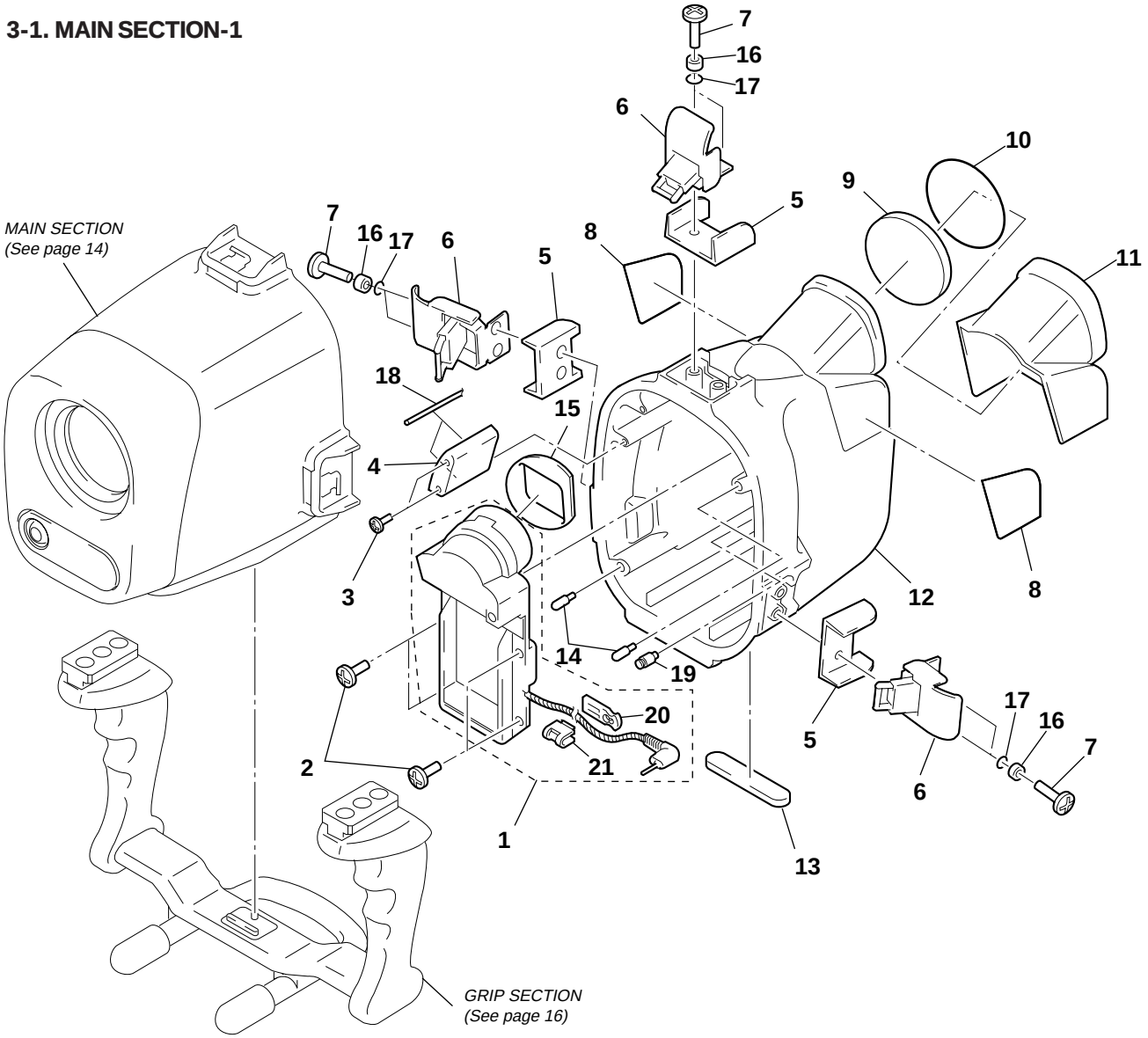
- All capacitors are in µF unless otherwise noted. pF: µµF
  50WV or less are not indicated except for electrolytics and tantalums.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
- Chip resistors are 1/10W unless otherwise noted.
  kW = 1000W, MW = 1000kW

SECTION 3
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

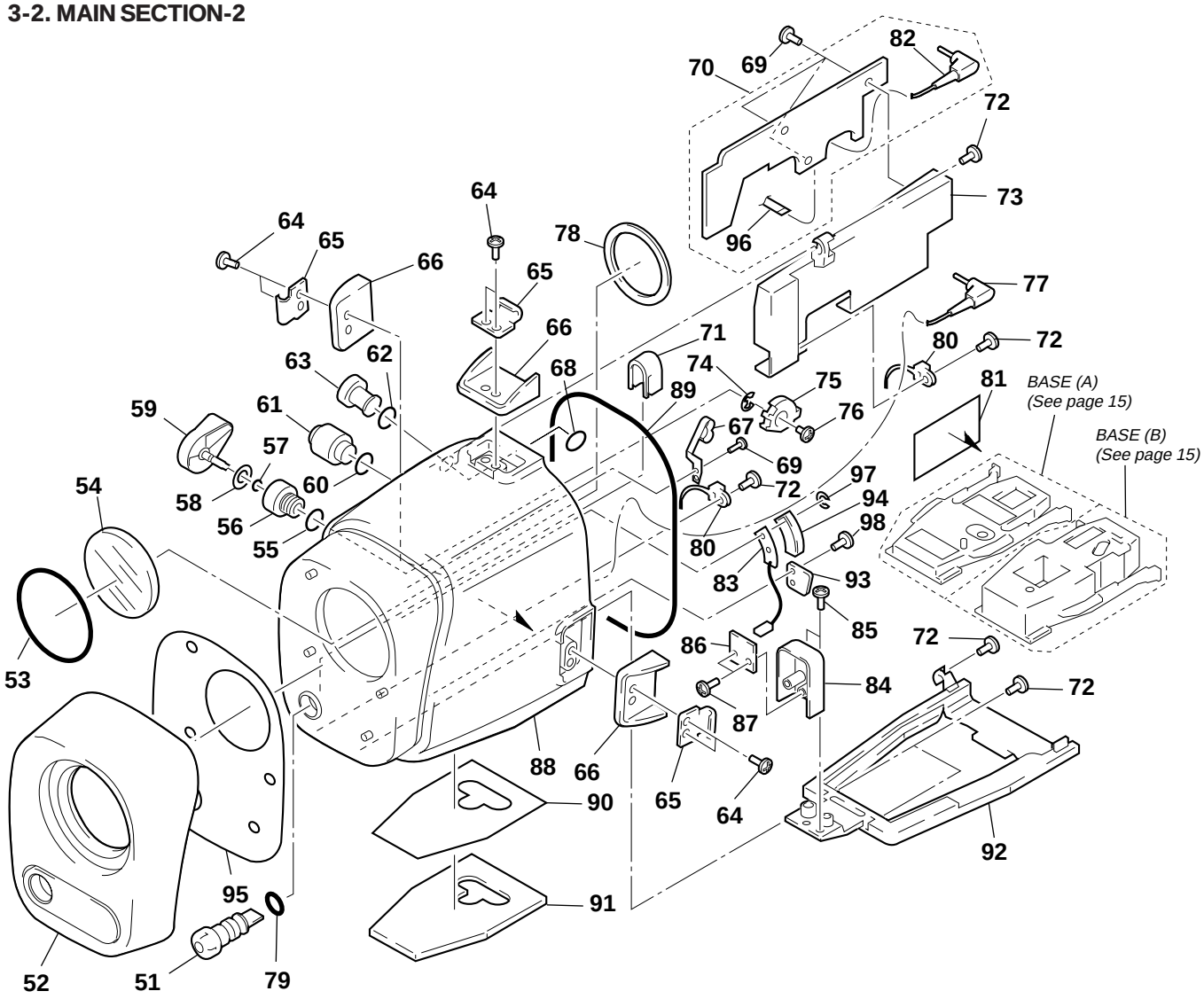
Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

3-1. MAIN SECTION-1



Ref. No.	Part No.	Description	Remark
1	A-7007-341-A	MONITOR ASSY (US, Canadian)	
1	A-7007-432-A	MONITOR ASSY (AEP)	
2	3-977-369-01	SCREW, +P M3X8	
3	3-052-092-01	SCREW, +P M2.6	
4	3-051-577-01	COVER, FIBER	
5	3-976-710-11	COVER (R), BUCKLE	
! 6	2-390-778-02	BUCKLE	
7	3-977-370-11	SCREW, +P M3.5X10	
8	3-977-994-01	SHEET, REAR PROTECTOR ADHESIVE	
! 9	3-976-695-01	GLASS, REAR	
! 10	3-977-361-01	RING (G58), O	
! 11	3-976-694-01	PROTECTOR, REAR CASE	
! 12	3-051-575-01	CASE, REAR	
13	3-976-698-01	FOOT, MAIN RUBBER	
14	3-977-265-01	PIN, POSITIONING	
! 15	3-977-996-01	PACKING, LCD	
16	3-052-426-01	COLLAR, PUNCH LOCK STOPPER	
! 17	3-052-427-01	RING (S-5), O	
18	3-051-698-01	FIBER, PLASTIC	
19	3-051-583-01	PIN, CABLE FIXED	
* 20	3-051-584-01	STRAP (A), CABLE	
* 21	3-051-585-01	STRAP (B), CABLE	

3-2. MAIN SECTION-2



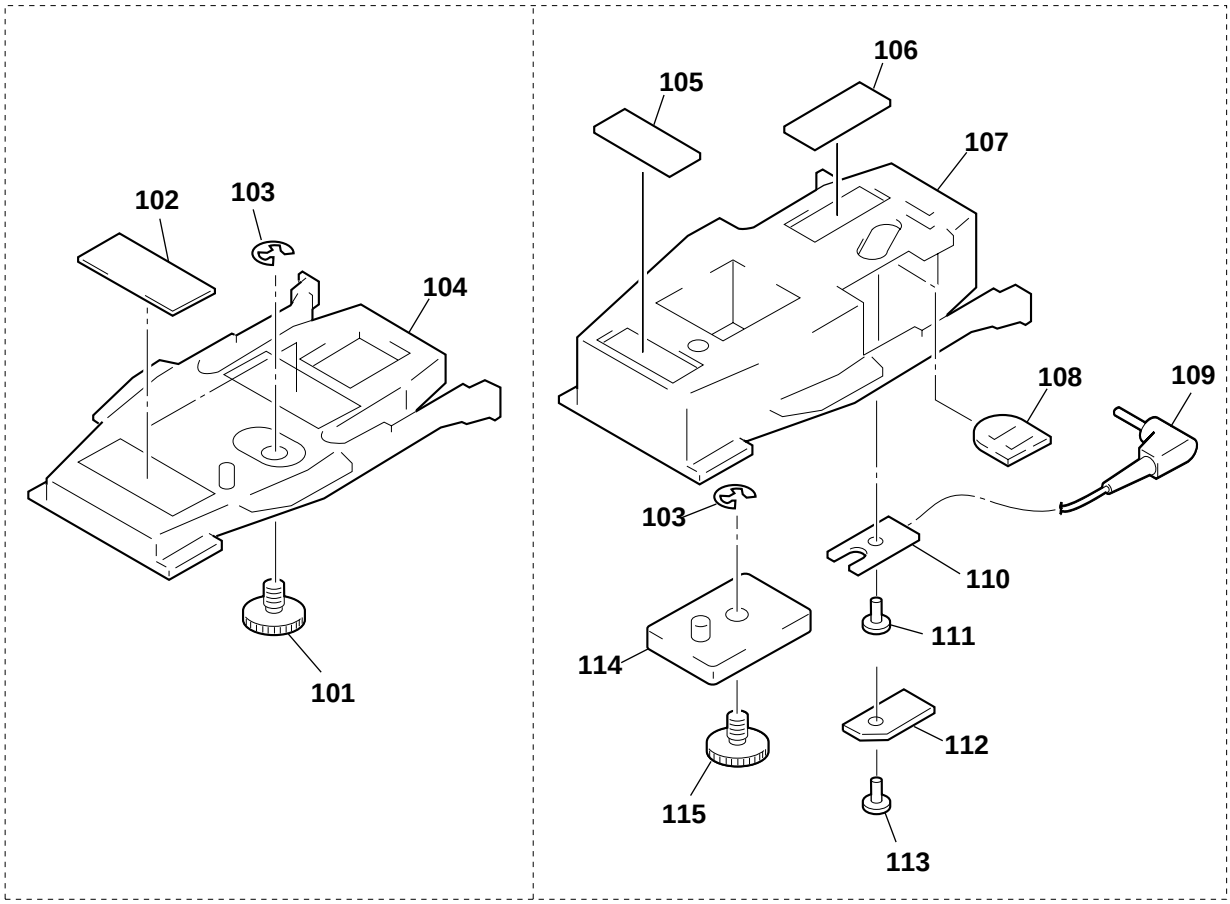
Ref. No.	Part No.	Description	Remark
51	A-7007-751-A	MICROPHONE ASSY, UNDERWATER	
52	3-976-665-01	PROTECTOR, FRONT CASE	
! 53	3-977-360-01	RING (G55), O	
! 54	3-976-668-01	GLASS, FRONT	
! 55	3-977-363-01	RING (JAS01011), O	
56	3-976-681-01	SWITCH (BEARING), POWER	
! 57	3-977-357-01	RING (P-3), O	
58	3-977-915-01	WAVE, WASHER	
59	3-976-669-11	LEVER, POWER	
! 60	3-950-888-01	RING (P-11), O	
61	X-3942-412-1	BUTTON ASSY, AF SELECTION	
! 62	3-950-858-01	RING (P-9), O	
63	3-976-680-01	WINDOW, SENSOR	
64	3-977-370-01	SCREW, +P M3.5X10	
! 65	2-115-906-01	RETAINER, BUCKLE	
66	3-976-711-01	COVER (F), BUCKLE	
67	3-051-559-01	SPRING, POWER SWITCH	
! 68	3-950-907-01	RING (S-8), O	
69	3-977-366-01	SCREW, +P M2	
70	A-7073-650-A	LM-57 BOARD, COMPLETE	
71	3-976-682-01	COVER, MICROPHONE	
72	3-977-369-01	SCREW, +P M3X8	
73	3-051-599-01	COVER, INNER	
74	2-391-512-01	E RING, 5	

Ref. No.	Part No.	Description	Remark
75	3-051-574-01	CAM, POWER LEVER	
76	3-977-368-11	SCREW, +P M2.6	
77	1-696-932-51	CORD, CONNECTION (MIC)	
78	3-051-586-01	PROTECTOR, FRONT LENS	
! 79	3-950-846-01	RING (P-7), O	
80	3-977-269-01	INSULOCK (T18 MRW)	
81	3-052-219-01	GUARD, CAMERA	
82	1-696-933-71	CORD, CONNECTION (LANC)	
83	A-7073-652-A	LL-9 BOARD, COMPLETE	
84	3-977-974-01	COVER, LED BOARD	
85	3-978-338-01	SCREW, +P M2X5 BT	
86	A-7073-651-A	LL-8 BOARD, COMPLETE	
87	3-977-366-01	SCREW, +P M2X4 BT	
! 88	3-976-664-11	CASE, FRONT	
! 89	3-977-362-01	RING (V145), O	
90	3-977-972-01	SHEET, GUARD RUBBER ADHESIVE	
91	3-977-264-01	GUARD RUBBER	
92	3-976-666-01	RAIL, BASE	
93	3-051-601-01	COVER, CABLE	
94	3-051-602-01	COVER, FRONT SENSOR	
! 95	3-977-995-01	SHEET, FRONT PROTECTOR ADHESIVE	
96	1-696-021-31	WIRE (LEAK SENSOR)	
97	3-052-220-01	RING (GTW-2), GRIP MOLD STOPPER	
98	3-977-369-21	SCREW, +P M3	

3-3. BASE (A), (B)

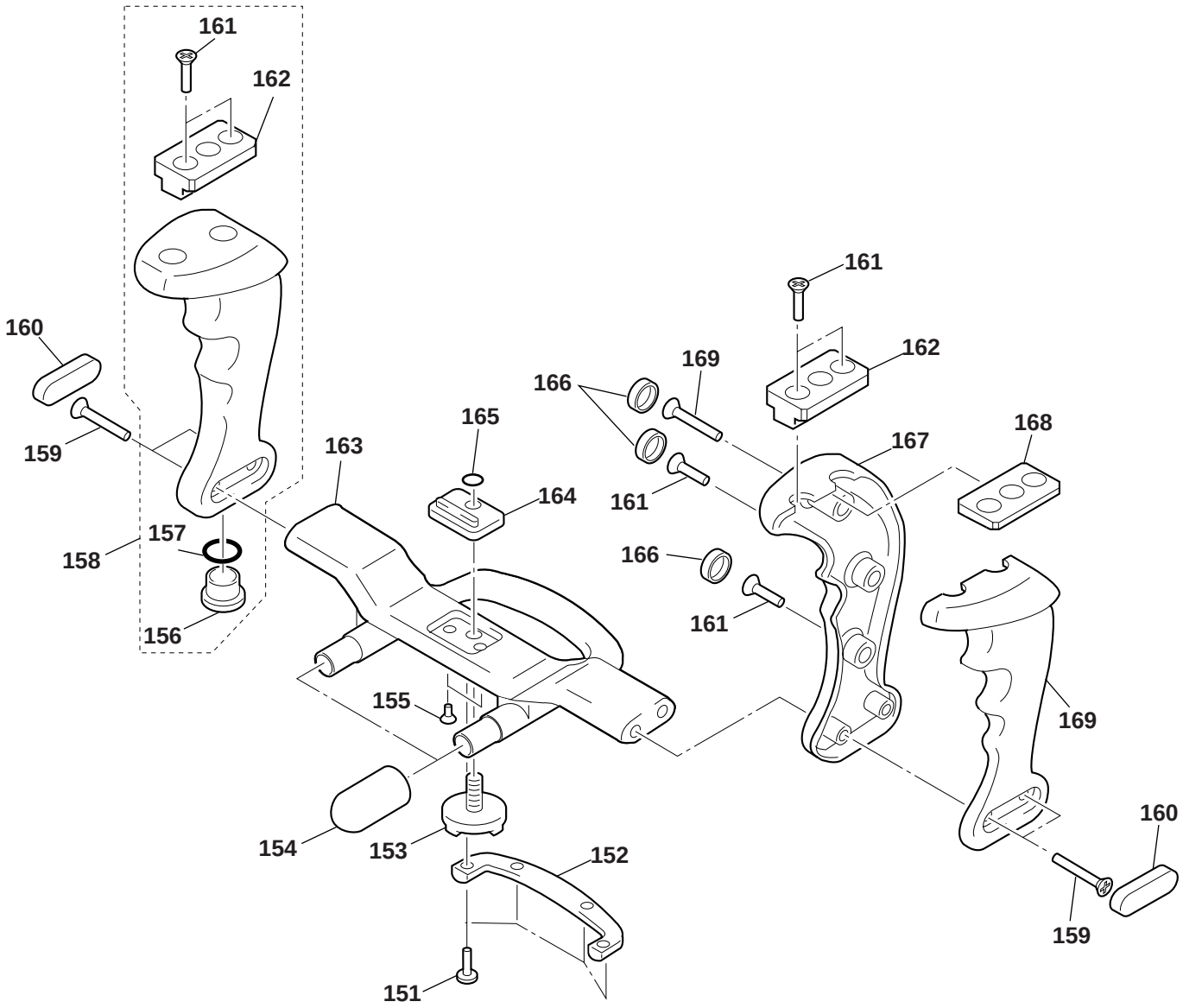
BASE (A) : DCR-TRV7

BASE (B) : DCR-TRV9



Ref. No.	Part No.	Description	Remark
* 101	3-970-217-01	SCREW, CAMERA FITTING	
102	3-964-843-01	SHEET, PROTECTION	
103	2-391-512-01	E RING, 5	
104	3-976-671-01	BASE	
105	3-052-491-01	SHEET (B), PROTECTION	
* 106	3-971-661-01	SHEET (A), PROTECTION	
107	3-051-582-01	BASE (B)	
108	3-953-086-01	BRACKET	
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	
110	A-7073-655-A	DZ-3 BOARD, COMPLETE	
111	3-052-092-01	SCREW, +P M2X6	
112	3-051-587-01	COVER, AV JACK	
113	3-977-366-11	SCREW, +P M2	
114	3-051-579-01	BASE, SLIDE (PLATE, SCREW)	
115	3-960-767-01	SCREW, CAMERA FITTING	

3-4. GRIP SECTION



Ref. No.	Part No.	Description	Remark
151	3-977-371-01	SCREW, +P M4X8	
152	3-976-691-01	FOOT, KEEL	
153	3-976-690-01	KNOB, TRIPOD SCREW	
154	3-976-689-01	FOOT, KEEL RUBBER	
155	2-186-307-01	SCREW (2) (M3X8), TAPPING	
156	3-945-010-01	LID, BATTERY REPLACEMENT	
! 157	3-945-087-01	RING, O	
158	A-7007-753-A	GRIP (R) ASSY	
159	3-944-944-11	SCREW, +K (5X30)	
160	3-945-020-01	COVER, GRIP	

Ref. No.	Part No.	Description	Remark
161	3-944-944-01	SCREW, +K (5X18)	
162	3-944-943-01	SHOE, ACCESSORY	
163	3-976-688-01	KEEL	
164	3-976-692-01	FIXED (LARGE)	
! 165	3-950-887-01	RING (P-4), O	
166	3-946-347-01	COVER (2), GRIP	
167	3-945-019-01	GRIP (L P)	
168	3-945-011-01	BRACKET, ACCESSORY SHOE	
169	3-945-013-01	GRIP (L D)	

SECTION 4
ELECTRICAL PARTS LIST

DZ-3 LL-8 LL-9 LM-57

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H

Note :
Items marked " *!* "are parts in relation to waterproof.
Replace these components with Sony parts.
Be sure to check up waterproofing after repair.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
	A-7073-655-A	DZ-3 BOARD, COMPLETE **********	
	A-7073-651-A	LL-8 BOARD, COMPLETE **********	
	A-7073-652-A	LL-9 BOARD, COMPLETE **********	
	A-7073-650-A	LM-57 BOARD, COMPLETE **********	
		MISCELLANEOUS **********	
77	1-696-932-51	CORD, CONNECTION (MIC)	
82	1-696-933-71	CORD, CONNECTION (LANC)	
96	1-696-021-31	WIRE (LEAK SENSOR)	
109	1-782-557-21	CORD, CONNECTION (A/V CABLE)	

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS **********	
	A-7007-757-A	FILTER BLOCK ASSY	
	2-115-921-01	GREASE	
	3-051-636-01	CONVERSION (MAIN). WIDE	
	3-864-446-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH/SPANISH)(US/CND)	
	3-864-446-21	MANUAL, INSTRUCTION (ENGLISH/FRENCH/GERMAN/SPANISH) (AEP)	
	3-864-446-31	MANUAL, INSTRUCTION (DUTCH/SWEDISH/ITALIAN/PORTUGUESE) (AEP)	
	3-864-446-41	MANUAL, INSTRUCTION (RUSSIAN/ARABIC/CHINESE/KOREAN) (AEP)	
*	3-976-684-11	CUSHION (UPPER)	
*	3-976-685-11	CUSHION (LOWER)	
	3-976-762-01	CASE, SOFT CARRYING	
!	3-977-362-01	RING, (V145) O	
	3-977-715-01	HOOD, LIGHT INTERCEPTION	
	3-977-971-01	CARRYING BELY	
	3-989-362-01	REFLEX PREVENTION RING	
**	NP-F330 BATTERY PACK		

Note .
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

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Personal A&V Products Company

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